COMMISSIONER OF PUBLIC HEALTH

WESTERN AUSTRALIA

REPORT

FOR THE YEAR 1962

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REPORT

OF THE

Commissioner of Public Health

for the year 1962

Presented to both Houses of Parliament

78567/12/63—700

The Honourable Ross Hutchinson, D.F.C., M.L.A.,

MINISTER FOR HEALTH

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Sir,

I have the honour to submit the Report of the Department of Public Health for the Year 1962.

LINLEY HENZELL, M.D. (London), B.Sc., D.P.H.,
Commissioner of Public Health.

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ANNUAL REPORT, 1962

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To the Honourable the Minister for Health.

I have the honour to submit the report of the Department of Public Health for the year 1962.

Although this report has been prepared while I have been in office, because of the delay in obtaining statistical data, it in actual fact refers to a period during which Dr. Linley Henzell was Commissioner of Public Health.

Dr. L. Henzell retired at the beginning of 1963 after completing five years as Director of Tuberculosis Control and 13 years as Commissioner of Public Health. During his term of office as Director of T.B. Control he developed an organisation which, by its achievements, is recognised as one of the finest in Australia and, while he was Commissioner of Public Health, the State made unprecedented progress in all aspects of public health and preventive medicine. He played a prominent part in most major medical developments in the State not the least of which was the introduction of a Medical School.

In his retirement he is accompanied by the best wishes of all who worked with him.

VITAL STATISTICS

In 1962 the population rose from 737,367 to 755,259, an increase of 2·4 per cent.

The Birth Rate fell from 23·16 per 1,000 mean population in 1961 to 22·59 in 1962.

The Death Rate continues to decline and at 7·69 per 1,000 mean population for 1962 is the lowest in Australia.

Maternal Mortality fell to 0·29 per 1,000 live births and second only to Victoria is the lowest in Australia.

Infant Mortality has risen from 19·67 per 1,000 live births to 22·27, and is the highest in Australia. This increase in Infant Mortality has been accompanied by a fall in the stillbirth rate which has fallen from 13·9 per 1,000 total births to 11·8. If Stillbirth rates and Infant Mortality rates are grouped together there has been little change in the last five years.

As infection nowadays plays only a minor role in Infant Mortality and as there has been no increase in deaths from such causes, the increase in Infant Mortality is due to prematurity and malformations. The increase in prematurity deaths is correlated with the decrease in stillbirth deaths, but the increase in malformations is a matter for further investigation. In this regard the State Health Council has recommended that malformations be made notifiable.

STATE HEALTH COUNCIL

The constitution of the Council is as follows :—

Mr. George Pestell—Representing the Royal Australasian College of Surgeons.

Dr. Cyril Fortune—Representing the Royal Australasian College of Physicians.

Dr. Roland Nattrass—Representing the Royal Australian College of Obstetricians and Gynaecologists.

Dr. D. M. Clement, Dr. H. Leigh Cook, Dr. I. O. Thorburn, Dr. M. F. Williams—Nominated by the Australian Medical Association.

Professor Gordon King, Professor C. W. D. Lewis, Professor E. G. Saint—Representing the Faculty of Medicine of the University of Western Australia.

Professor W. B. Macdonald—Professor of Child Health, University of Western Australia.

Professor K. J. Sutherland—Dean of the Faculty of Dental Science of the University of Western Australia.

Dr. F. G. Prendergast—Representing Psychiatrists in private practice.

Inspector-General of Mental Services or his Deputy.

The Commissioner of Public Health.

The Deputy Commissioner of Public Health.

The Under Secretary for Health.

During the year leave of absence was granted to Professor E. Saint. Dr. R. B. Lefroy acted as Professor Saint's Deputy.

Dr. Dixie Clement resigned after several years' service and Dr. R. J. Maguire was appointed as his successor.

There were three meetings of the Council during the year. Meetings of the following Committees were held : Dental Health Committee, Maternal and Infant Health Committee. Major matters dealt with by the Council included :—

Recommended additional accommodation for hemiplegics.

Survey of diabetics.

Support of proposed fluoridation of public water supplies.

Recommendations for new mental health legislation.

Investigation of need for special provision to care for and treat alcoholics.

Accommodation of aged chronic and senile dementia patients.

Development of further teaching hospital facilities.

Co-ordination of activities between Royal Perth and Sir Charles Gairdner Hospitals.

Availability of open chain ureides.

Planning and co-ordination of geriatric services.

LEGISLATION

During 1962 the following legislation was passed :—

Health Act Amendment Act, 1962.—Principal features were—granting power to regulate sanitation of swimming pools, requiring persons suspected to be carriers of infectious disease to submit to medical examination ; widening powers of local authorities to care for aged persons ; permitting blood transfusions to be administered to a minor without parental consent.

Health Act Amendment Act (*No.* 3), 1962.—Subsection (2) of Section 99 was repealed.

Mental Health Act, 1962.—Whilst not administered by the Commissioner of Public Health, the passing of this legislation represents a big step forward in the approach to the treatment of mental illness, and gives effect to the recommendations of the State Health Council in this field.

Pharmacy and Poisons Act Amendment Act, 1962.—The amendments paved the way for the introduction of the proposed extended course of training in Pharmaceutical Chemistry.

New Delegated Legislation included :—

(1) Extensive amendments to the Model By-laws.

(2) Amendment of Sewerage & Drainage Fixtures & Fittings Regulations.

(3) Amendment of Midwives Regulations.

PUBLIC HEALTH LABORATORIES

The Laboratories perform the dual role of providing a public health laboratory service for the State and a hospital laboratory service for the Sir Charles Gairdner Hospital and through a system of branch laboratories for country hospitals.

Because of shortage of accommodation in the main laboratory in the Sir Charles Gairdner Hospital, several sections of the laboratory are scattered through the Metropolitan Area. Present accommodation is so grossly overcrowded that the building of new laboratories has become a matter of considerable urgency.

In the past five years the amount of work performed by the laboratories has increased tenfold. This is far greater than the increase that has taken place in the staff and, although salaries have risen considerably, the cost, per unit of work performed, has fallen. Staggering of working hours and improved equipment have been major factors in the improved economy.

The rapid growth of laboratory services is a feature of modern medicine. This is just as evident in the field of preventive medicine as it is in clinical medicine. The pattern of the work is changing. No longer is the laboratory mainly concerned with establishing the presence of disease by serological testing or the isolation of bacteria. It must assist in the prevention of disease by chemical, physical and biological analysis of many and varied samples taken from man's environment, from the food he eats, the water he drinks and the air he breathes. In an age of sophistication wherein our industrial and agricultural economy is dependent on a vast array of new chemicals and new techniques, and new food processes and new drugs are constantly appearing, man must be protected from their known and unknown effects and the laboratory in this respect must keep up with the changing demands placed upon it.

The future of preventive medicine lies not only in the field of protection from environmental hazards and the control of infectious disease, but also in the early detection of genetic and metabolic diseases and in the prevention or attenuation of their effects. We have entered an age wherein expensive surveys of large populations are contemplated in order to discover the few hidden individuals with some particular form of pathology which, being early recognised, may be effectively treated. We examine the urine or blood of 20,000 infants to find the one hidden case of phenylketonuria, 2,000 cervical smears to find a hidden cancer. We contemplate a massive search for hidden diabetes mellitus and tomorrow, when suitable criteria are established and useful ameliorating techniques are available, we will most certainly be examining the chemistry and rheology of the blood in the susceptible age groups of our population to reduce the incidence of atherosclerosis.

What has been accomplished in preventive medicine has been accomplished at comparatively little cost, but the nearer we strive to perfection, the ever greater becomes the effort in proportion to the benefit attained. It may be easier to prevent an epidemic that will kill 20,000 people than to find, and save the one chromosomal abnormality in that population. The cost increases the nearer we reach perfection and a large part of that cost is the laboratory service. The question is, " Who cries halt, and, when ? "

The Director of Laboratories report clearly indicates that we are adequately meeting the challenge of modern preventive medicine and the list of scientific papers published establishes the quality of the work.

TUBERCULOSIS

In 1962, 268 new cases were registered. This slight increase reflects the activity of the Compulsory Mass X-ray Survey. This survey is now completing its third examination of the Metropolitan Area and in 161,564 persons examined, 83 cases of active tuberculosis of the lung were discovered and 55 cases of cancer of the lung. In the three surveys the following are the number of cases of active tuberculosis found per 1,000 persons examined :—1954, 1·4 ; 1957, 0·7 ; 1962, 0·51.

Five per cent. of the new infections are due to atypical mycobacteria and of the 14 persons who died during the year of progressive pulmonary tuberculosis, no less than seven (50 per cent.) were due to atypical mycobacteria. The Public Health Laboratories have now made 1,357 separate isolations of atypical mycobacteria and Dr. Kovacs is in receipt of a W.H.O. grant for research in this field of work.

In addition to giving assistance to work being done in the clinical field in atypical infection, the laboratory is isolating the mycobacteria from various animals to assist in finding the pathways to man.

Tuberculosis in migrants is from 2 to 2½ times as common as in native born white Australians and is highest in fare paying British migrants. As this is the only migrant class exempt from pre-embarkation X-ray examination, there seems to be a good argument for extending the X-ray examination to this class.

Only three new cases of tuberculosis among miners was registered for the year, but the 50 new cases of silicosis and two of asbestosis, gives no grounds for complacency. It is proposed to start a new section in the Occupational Health Branch dealing entirely with the pneumoconioses.

EPIDEMIOLOGY

Although the major communicable diseases have been kept well under control the incidence of bowel infection of a minor nature remains high. Salmonellosis and infective hepatitis are the chief offenders and indicate a need for a higher standard of hygiene particularly among food handlers. Every effort has been made to improve this by Health Education, instruction in schools, and more stringent regulations for food preparation establishments.

Trachoma remains a problem which will not be solved until a much higher standard of living has been established for the native population or until an effective vaccine has been discovered. Treatments, however, show of late some improved effects and intensified activity in this field is being prepared.

The marked increase in venereal disease particularly gonorrhoea which for some time had been evident in the countries of Western Europe and America and in other States of Australia, became evident in Western Australia in 1962. The disturbing factor in this increase is the growing proportion of teenagers involved.

Although several different influences may be at work in producing this increase, it is indisputable that a considerable amount of it is directly attributable to an increased promiscuity which is being developed as a cult among a proportion of the teenage population. The efficiency of the antibiotics in providing a cure has removed the restraint that the dread of the disease once supplied, and a new deterrent is required to take its place. To find it is a problem which involves society and its institutions far beyond the activities of a Public Health Department.

POLIOMYELITIS

Since vaccination with Salk vaccine commenced six years ago, 1,600,000 doses have been given in W.A. During 1962 and consequent on the experience in other countries, a four dose regime was introduced instead of three doses.

This required increased activity on the part of the immunisation staff.

Since Salk vaccination was introduced 450,000 persons have received three doses—and in only one of these triple vaccinated persons has poliomyelitis developed. Of the 20 persons developing poliomyelitis since vaccination commenced 16 were unvaccinated and three inadequately vaccinated.

This excellent record of Australian made Salk vaccine must be kept in mind in any deliberation concerning the future of poliomyelitis vaccination. The general trend in other countries is to switch over to attenuated live virus vaccine given by the oral route. This vaccine has several advantages which probably outweigh its few disadvantages and its adoption on a National level is under review by the National Health and Medical Research Council.

SWIMMING AND HEALTH

An interesting review of the attendances of 5,000 children at swimming classes is provided by Doctors Snow and Allen. Although it was impossible to control this experiment by ascertaining the amount of infection occurring generally in the areas under review, and also of obtaining any accurate indication in most cases into the cause of absenteeism, it is indeed remarkable that the number of lessons missed by absenteeism in the various pools was directly related to the bacteriological quality of the water.

Absenteeism in the upper reaches of the River was higher than in the lower part of the estuary and the estuary higher than in the ocean, and the ocean higher than in chlorinated swimming pools.

Despite any defects this experiment has in the absence of complete control data it is strong evidence to support recommendations that the Health Department has given for many years that money should not be spent on river swimming pools but in the construction of Olympic Pools in which the water is circulated, cleared and chlorinated.

DENTAL CARIES AND DRINKING WATER

An interesting epidemiological study is recorded in Appendix VII by Kailis and Silva who, on behalf of the Department, carried out an investigation into dental caries in children in Cue and Meekatharra. Cue has a concentration of 1·25 p.p.m. fluorine in the drinking water and Meekatharra 0·4 p.p.m.

Although the figures relate only to 38 children in Cue and 52 in Meekatharra, the fact that there was 62 per cent. less dental caries in Cue than in Meekatharra is not without significance and is consistent with results claimed for fluorine in drinking water in other parts of the world.

CHILD HEALTH SERVICES

The purpose of the Child Health Services is twofold.

First, the detection of any abnormality or defect in the child at as early an age as possible.

Second, the education of the parent and the child in healthy living.

Detection of defects is done by nurses in the Infant Health Clinics and by medical inspection in the Kindergarten and School Medical Services. Dental inspection is carried out by the School Dental Service.

To these have been added the Pre-school Health Scheme wherein the Infant Health Nurse refers the child to its own family doctor at the ages of 6–8 weeks, one year and five years for a special examination according to the details on a special report card. This Scheme has now gone beyond the pilot stage and has been extended to the whole State.

Education for individual mothers takes place routinely at all Infant Health Clinics and also in organised lectures for parents and expectant parents. Mothercraft is now being taught extensively in schools and in various organisations.

For parents and children too remote to attend clinics or classes in Mothercraft, there is a correspondence service which is supported by visits to the homes by the correspondence nurses. These visits, though infrequent, reach the remotest areas.

The reports on the various sections of Child Health should be studied in detail to obtain a proper appreciation of the work done but the following figures give some indication.

Seventy-eight per cent. of all children born in the State attend an Infant Health Clinic.

Sixty-eight per cent. of those written to in remote areas maintain contact with the Correspondence Section.

Of the 3,759 children examined in Kindergartens 451 were referred to their own doctor for medical attention, and of 56,519 children examined in schools, 4,838 were similarly referred.

Three thousand girls took classes in Mothercraft at school and 600 by Correspondence.

The School Dental Service examined 8,911 children and treated 5,359.

It is of interest to note that the School Medical Service draws attention to a decline in the number of defects it finds among school children.

This is almost certainly due to improved pre-school medical services and a better appreciation among parents and doctors of the need for early detection of defects.

OCCUPATIONAL HEALTH

The work of this Department continues to expand and with increased industrialisation and mining activity in the State, the demands on the Department will continue to grow. The Department's objective is to provide an expert service of advice to employer and employee on the safe handling of hazardous substances and the safe management of hazardous processes in industry and agriculture, so as to safeguard the health of all persons who may be associated directly or indirectly with these substances or processes.

Toxic substances used in industry and pest control operations occupy a great deal of this Department's activity, but noise, dermatitis and the dust diseases of the lung are also given considerable attention.

The Occupational Health Section also works in close co-operation with the Radiological Advisory Council and the State X-ray Laboratory in the monitoring and control of radiation exposure of all workers in radiation and persons associated with radiation hazards.

The film badge service run by the State X-ray Laboratory is now universally used by radiation workers and the results of monitoring are closely scrutinised by the Radiological Advisory Council. All applications for the use of radiation are submitted to this Council and the suitability of the applicant and his equipment are closely examined before a licence for use of radiation is given. Wherever monitoring indicates an overdosage, an inspection is carried out and licences are withdrawn if improvements are not forthcoming. This action, or threat of this action, has greatly reduced inadvertent overdosage of radiation in medical and non-medical installations.

STATE X-RAY LABORATORIES

These perform the dual function of radiation monitoring and control throughout the State and the provision of a workshop for the maintenance of X-ray and electronic equipment for all hospitals and laboratories.

Because of the technical ability of the staff and the high standard of workmanship, the laboratory is constantly involved in the planning, building and adapting of radiation and electronic equipment of an experimental and research nature to meet requests from many hospital and laboratory departments. Some idea of the extent of this work can be obtained from the report of the Officer-in-Charge.

It should be noted in his report that, in 1962, 94 light beam diaphrams were fitted. The Radiological Advisory Council made them obligatory as a method of reducing radiation dose to the population.

No detailed report on Radiation Control is included as the Physicist-in-Charge was overseas on post-graduate training ; the work continued, nevertheless.

A special section of the laboratory deals with the maintenance of the linear accelerator at the Institute of Radiotherapy. The report of the Engineer-in-Charge of this section indicates that not only has this piece of complicated equipment been kept going without major breakdown but also that improvements have been made to it by the laboratory to improve its mechanical efficiency and control mechanism. Stoppages from breakdowns on the accelerator are remarkably few, and are a tribute to the machine and the staff maintaining it.

ENVIRONMENTAL SANITATION

The policing of Sanitary Law in the maintenance of a high level of environmental sanitation is the responsibility of the Health Inspector.

The Chief Inspector's report outlines the activities for the year.

Food and water supplies have to be examined and tested. The number of condemnations at abattoirs is indicative of the protection given by the Meat Inspection Branch to the public from the sale of diseased meat.

The report includes reference to the testing of swimming places but includes little about drinking water. This is because testing of drinking water supplies is carried out under the supervision of the Water Purity Committee, on which the Health Department is represented and the results are available from the various water authorities concerned. The bacteriological tests are carried out in the Public Health Laboratories.

Considerable activity in fly control measures has been evidenced in recent years and the work done by the Department and Local Authorities is outlined in the Chief Inspector's report. It may be noted that the principal breeding areas discovered were—rubbish bins, lawn clippings, manure heaps and rubbish pits.

At a time of the year when fly breeding is at its greatest, there is a conflict between ways and means of disposing of garden rubbish and the Fire Precaution Regulations. A satisfactory means of disposal of lawn clippings has still to be found.

Two points to be noted in the Chief Inspector's report are the introduction and increasing popularity of the combined septic tank to deal with sullage as well as sewage, and the six pint flush cistern. The first has eliminated the domestic grease trap which was a continual source of foul smells and fly breeding and the second has allowed the introduction of water borne sewage into districts with restricted water supplies. In most country towns bacteriolytic treatment of sewage is now obligatory and, with the introduction in the Metropolitan Area of a bore hole latrine on building sites, the sanitary pan service is now almost a thing of the past. Albeit it died so hard in some areas and, in the minds of some people that one can well appreciate the difficulties encountered by Chadwick a hundred years ago.

In conjunction with the Local Authorities in the Kimberley Area, the Department appointed a permanent health inspector to that area. His work has been greatly appreciated locally, and is an indication of the new and progressive outlook in the North. It is hoped to extend this type of service to other Northern areas.

PUBLIC BUILDINGS

Under the Health Act the safety of Public Buildings is a responsibility of the Commissioner. This at first glance may seem a trifle anomalous but, as it involves the co-operation of inspectors and building supervisors, of Local Authorities and architects, structural and electrical engineers of P.W.D. and the Fire Brigades Board, as well as the Health Department, the co-ordination of all these activities is suitably a function of the Health Department. The activities of this section are increasing rapidly with the many additions to public buildings and although our regulations are often criticised for their stringency, our record of public safety in public buildings is excellent and the not infrequent reports that come from other countries, of disasters in halls, schools, hospitals, etc., from fire and panic, justifies us in maintaining our standards.

NURSING

In the Principal Matron's report and in the report of the Secretary of the Nurses Registration Board we get some indication of the changes and difficulties facing the nursing profession.

The development of highly skilled techniques in medicine requires a high degree of skill, training and specialisation of the nurse in hospital practice. The widening of medical outlook into the fields of preventive Social Medicine requires the nurse to know a great deal about people, their homes and their problems. At the same time the nurse is still required to minister to the needs of the sick patient in the traditional manner of looking after his comfort and welfare.

We are developing towards a stage which is already apparent in our registration of Nursing Aides, wherein two cadres of nurses will be clearly apparent. The whole of nursing training is at present under review but the general trend is to provide a basic training over a wide field of nursing activities and thereafter to encourage nurses to enter a higher cadre of nursing by post-graduate specialisation.

Individually, our present schools of nursing could not provide the broad form of basic training, and indeed it is doubtful if any comply with the requirements for registration of nurses in the United Kingdom. It, therefore, seems likely that we will have to give close consideration to a combined School of Nursing for Western Australia by utilising and combining the facilities of our present schools.

By providing such a school, which would exist primarily for the training of nurses and not for the convenience of individual hospitals, we would be in a position to provide the specialist training which at present has to be obtained outside the State. Such a school would also facilitate re-training and thereby allow married women to re-enter the field of active nursing at all levels. At the present the vast majority of nurses quit nursing soon after their training is completed ; many of them would return to nursing at a later date if suitable retraining was available. In the U.S.A. hospitals would be almost devoid of nursing staff if married nurses were not employed.

HOSPITALS

Appendix XIX is entitled " The Role of the Hospital in the Community."

It was written after a visit to hospitals in Western Europe, the United Kingdom, Canada and the U.S.A. and a brief " on the spot " study of the hospital systems of these countries.

The purpose of the essay is to bring about a realisation that hospital systems which exist purely for the needs of curative medicine, and are isolated from the general preventive and social medicine activities of Public Health and Local Health Authorities, are nowadays an expensive luxury. To obtain full utilisation of the enormous sum required to run hospitals, the hospital system must be integrated with, and play, a prominent part in the preventive, social and rehabilitative medicine in the community, as well as concerning itself with the curative side of hospital practice. To do this it must be allied in thought and action to the other authorities who act for the benefit of human welfare.

The hospital's interest and work should not cease at its portals but its influence should be carried into the home, the factory and the street, so that illness or injury may be prevented or repaired with the minimum use of hospital beds and in consequence the minimum cost to the State.

It was with these ideas in mind that the Department in 1962 created a new appointment, and Dr. J. Rowe became Assistant Principal Medical Officer with the objective of not only suervising the construction, equipping and staffing of hospitals, but also to assist them in developing a means of projecting their activities further into the community than the confines of their physical boundaries.

It will also be necessary to secure the co-operation and assistance of Local Authorities and Organisations concerned with domiciliary services to bring about a well organised system in which the various bodies will work in harmony to produce a service of medical care which can be effective and at the same time make the most economic use of hospital beds. The Department is working towards the development of this integrated system. Such a system requires an efficient Health Visitor service. A Health Visitor being a specially trained nurse who knows all the families in her district and is in a position to advise them of all the hospital, medical and social welfare facilities in the community, both Government and non-Governmental and to ensure that the best use is made of these facilities for the welfare of the indvidual, in particular, and the community in general.

It is visualised that a Health Visitor service will be inaugurated by an amalgamation of existing Infant Health, School Nurse and T.B. visiting services, but its development into a an effective service to cover all areas will require the active co-operation and financial support of Local Authorities.

Hospital building and reconditioning has continued along general lines approved by the State Health Council and is dealt with in a separate Report.

HOSPITAL MORBIDITY STATISTICS

The statistics from the three main general hospitals, Royal Perth Hospital, Princess Margaret Hospital and Fremantle Hospital show in this year's report some interesting trends.

The total number of discharges recorded in 1960 was 21,033 ; in 1961, 22,547 ; and in 1962, 29,525. The big increase in 1962 is partly due to an increase of some 3,000 due to recording of private patients at Fremantle Hospital, omitted from previous reports, and the remainder is due to the increased use of existing beds from pressure of demand. The average length of stay in hospital, for all cases in 1960, was 15·51 days ; in 1961, 14·57 days ; and in 1962, 12·13 days.

For operation cases the figures for the three years were, respectively, 18·28 days ; 17·22 days and 13·72 days. The big decrease in the length of time patients stay in hospital is uniform throughout the age groups and is not a characteristic of a particular age group. This means that, under pressure of the scarcity of beds, hospital medical administrations have greatly increased their efficiency in the economic use of hospital beds and 4,000 more patients were able to be treated as inpatients in the three hospitals in 1962, than in 1961.

Another important trend is the rapidly increasing number of patients under the age of 15 years.

For the past fifteen years the number of beds for this group has remained almost static ; new drugs, new techniques and the prevention of infection have greatly reduced the demand for hospital beds for children. The enormous growth in our population in this age group, however, has now reached a stage when it seems inevitable that more beds for children will have to be provided.

The statistics concerning the use of hospital beds for accident cases remain remarkably consistent from year to year. Approximately 20 per cent. of our general hospital beds are utilised by accident cases of which 7 per cent. are road accidents and 6·5 per cent. are due to falls of various sorts.

W. S. DAVIDSON, M.B., Ch.B., Aberd., D.P.H., Aberd.,
Commissioner of Public Health.

Appendix I

VITAL STATISTICS FOR WESTERN AUSTRALIA

	1960	1961	1962
Mean Population—			
Males	368,112	375,768	384,414
Females	354,788	361,599	370,845
Total	722,900	737,367	755,259
Births—			
Males	8,699	8,800	8,824
Females	8,227	8,278	8,240
Total	16,926	17,078	17,064
Birth rate per 1,000 of Mean Population	23·41	23·16	22·59
Deaths—			
Males	3,353	3,326	3,397
Females	2,344	2,403	2,413
Total	5,697	5,729	5,810
Death rate per 1,000 of Mean Population	7·88	7·77	7·69
Natural increase rate per 1,000 of Mean Population	15·53	15·39	14·90
Infant Mortality per 1,000—			
Live Births :			
Metropolitan Area	19·47	16·51	20·15
Rest of State	23·89	23·03	24·57
Whole State	21·62	19·67	22·27
Stillbirths :			
Metropolitan	117	121	111
Whole State	226	240	203
Stillbirth rate per 1,000 total births	13·2	13·9	11·8

Comparison of Infant Mortality and General Death Rate

Place	Infant Mortality			General Death Rate		
	1960	1961	1962	1960	1961	1962
New Zealand (*a*)	22·59	22·76	20·33	8·79	8·97	8·87
Western Australia	21·62	19·67	22·27	7·88	7·77	7·69
New South Wales	21·16	20·84	21·36	9·14	8·95	9·26
Victoria	18·46	17·80	18·50	8·59	8·39	8·64
Queensland	21·01	20·01	21·13	8·30	8·42	8·56
Tasmania	19·09	16·81	20·69	7·70	7·89	7·99
South Australia	18·94	20·00	19·15	8·26	8·06	8·32

(*a*) Includes Maoris.

Appendix II

PUBLIC HEALTH LABORATORY SERVICE

ANNUAL REPORT, 1962

To the Commissioner of Public Health, Western Australia.

I.—ADMINISTRATION

General

The duties of the Public Health Laboratory Service remain unchanged, i.e., to provide a hospital laboratory service and a public health laboratory service. The problems peculiar to this symbiosis have been dealt with in previous annual reports.

Branch Laboratories

Problems remaining are

(1) *To the North.*—Derby is still an isolated laboratory but arrangements are being made for the opening of two more branch laboratories in this vast area of country.

(2) *To the South.*—Manjimup laboratory and Margaret River sub-laboratory began to function in 1962.

A laboratory is planned for Claremont Mental Hospital but still is not completed.

Routine periodic checks continue to be made on the work of the branch laboratories. It is unusual to find any significant fault and when a fault is found it is almost always due to an undetected sudden malfunctioning of a piece of electric equipment. Complex electrical devices such as spectrophotometers have become so much a part of laboratory work that all too often it is presumed that they need no supervision. The necessity for continued close control of branch laboratory work is well shown in a recent survey from Alberta in Canada where a check of small hospital laboratories showed them to be seriously in error in one test out of every three. It is still true to say that in each branch laboratory the senior in charge is overworked. As far as is possible an increase in staff is made to each branch laboratory as soon as the need becomes apparent but usually the work grows at a faster rate than does the staff.

Accommodation

Lack of adequate accommodation is even more pressing a problem than before. In addition to the scattering of laboratory units in various parts of the Perth Chest Hospital three of the main units of the central laboratories are sited at some distance from the main portion of the central laboratories. This necessitates the wasting of much time in travelling.

Tours and Conferences

During 1961 Miss Jenkyn spent some months in the United Kingdom in training in virus serology, and certain forensic laboratory investigations.

Dr. Perret attended the ANZAAS conference in Sydney and took the opportunity of consulting with other workers in the Eastern States. Dr. Kovacs visited Canberra for a tuberculosis conference and Melbourne for a waters conference.

Working Hours

The system of staggered working hours continues, with the laboratories functioning from 0800 hours to 2200 hours seven days weekly.

Character of Work

Half the beds of the hospital have become general medical and surgical beds, leading to wider and heavier demands on the laboratory services.

II. STAFF

General

STAFF CHANGES IN 1962

Posts	Resignations	Recruitment	Remarks
Pathologist	....	1	
Senior Technologists	....	4	
Technologists	3	9*	* One, Borneo, Colombo Plan Training Scheme.
Laboratory Assistants	3	3	
Clerical Workers	3	3	
Laboratory Attendants	8	10	
Others	....	2	

Health

The pattern of sickness among the staff remains much the same, i.e., a small group of workers account for a very high proportion of the sickness absenteeism.

Medical Staff

The recruitment of Dr. B. Elmes in late 1962 has provided a senior Head for the histopathology department.

III. WORK DONE IN 1962

1. *General*

The work done during the year is summarised in a series of tables at the end of this report. Tables 1A and 1B give a broad outline of the work done during 1962 in the central laboratories and in the branch laboratories respectively, while Tables II–VIII give the work of each laboratory in more detail. The work in all central laboratory departments and branch laboratories follow the same pattern, namely, a continued increase in the amount of work with the newer central departments and the newer branch laboratories showing the most marked increases.

2. *The Problem of Increasing Demands*

Any hospital which tries to function without a Casualty Department would soon find its specialist services, surgeons, physicians, and the like, overwhelmed by patients with trivial ailments. It is the function of the Casualty Department to screen off and treat the large mass of individuals with minor complaints, leaving the more specialised staff free to deal with the major medical and surgical problems admitted to hospital. This was the function of the clinical side-room *vis a vis* the laboratory with all minor laboratory examinations being carried out by the resident medical and nursing staff on the wards leaving the laboratories free to investigate individuals found, on preliminary investigation, to require complex laboratory investigations. However, with the passing away of the clinical side-rooms the laboratories have become overwhelmed with minor investigations such as tests for albuminuria, tests for occult blood in the stools, estimation of haemoglobin levels in surgical patients, etc., etc. An analysis of the work of the haematology department shows that at least 12 per cent. of patients seen for " full blood investigation " were found to be normal. These are tests which can be carried out in the wards thus greatly cutting-down laboratory expenditure and also saving the patient a heavy bill for laboratory investigations.

3. *Laboratory Costs*

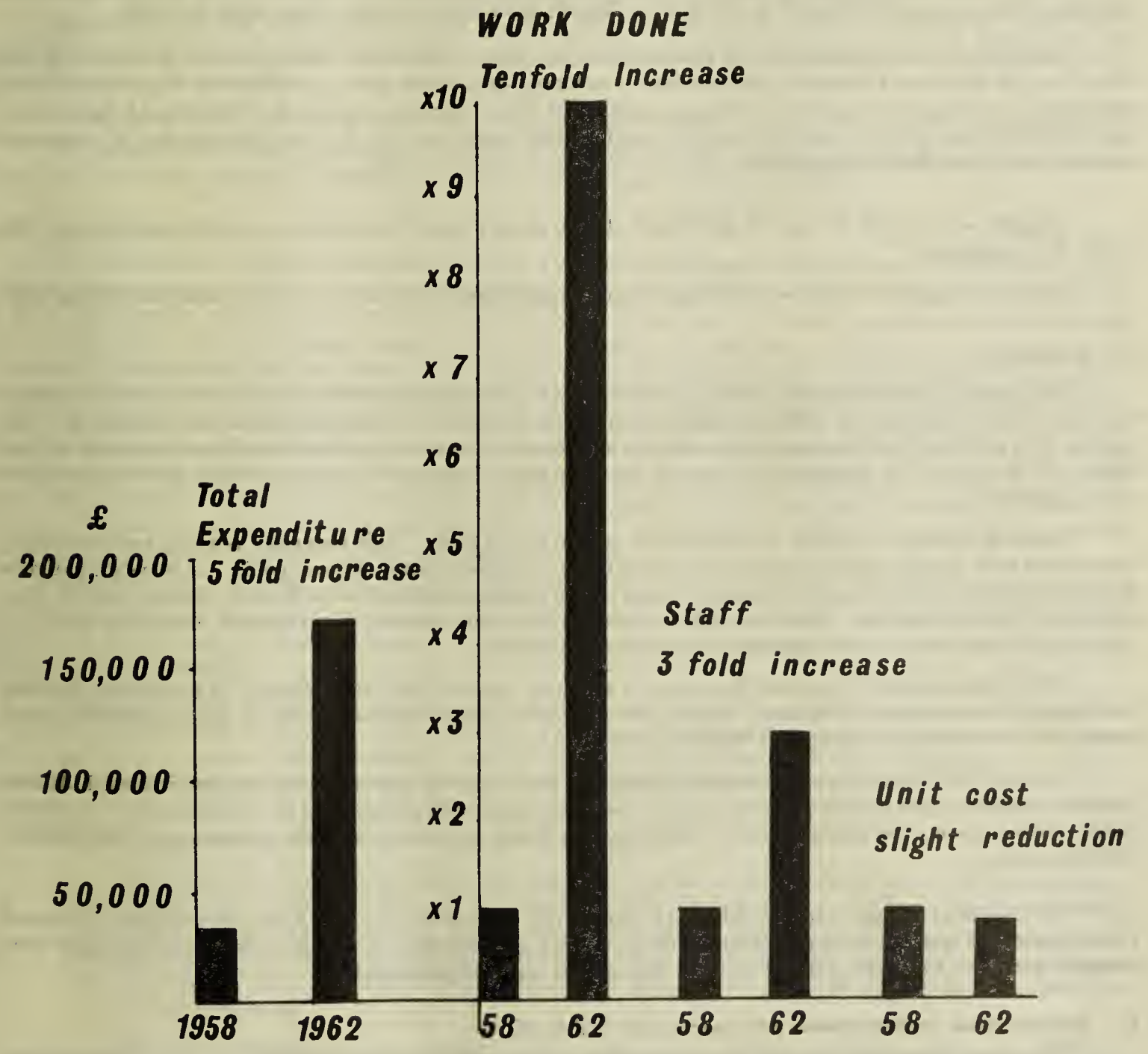


Diagram A above gives a graphic representation of the increase in work, in expenditure, and in staff since 1958. It will be seen that with a threefold increase in staff and a five-fold increase in expenditure there has been a ten-fold increase in work done. This increased efficiency is partly due to better utilisation

of man-power partly due to greater use of labour-saving devices such as red-cell counters, and partly due to the staggering of working hours. The five-fold increase in costs is frightening but analysis shows that the increased costs are not due to any increase in cost per unit of work but are a true index of actual increase in work done. In spite of rising wages and costs of materials since 1958 the cost per basic unit of work has been kept stable mostly by the use of improved methods as detailed above.

4. *Microbiology*

A. *General Microbiology*

The work for the year is summarised in Table II : over-all it shows a minor increase compared with previous years. This is to be expected in a long-established laboratory department and also reflects to some extent the absence of large-scale surveys.

There was a considerable amount of research work carried out.

The main research work was on cross infection and disinfection especially with gaseous disinfectants, ethylene oxide and formalin. The lack of experienced staff has so far prevented the finalisation of these experiments.

A mobile sterile hood was constructed in which the work is done under positive pressure of sterile air. This model proved most satisfactory and a further unit will be placed in the media room.

B. *Salmonella Investigation Unit*

The work done in this unit in the year 1962 is shown in Table II. In this laboratory the routine work is becoming stabilised and any marked further increase in work will only result from investigations of dysentery or salmonellosis outbreaks.

The Salmonella serotypes found in 1962 can be seen in Table IX appendix. Table X appendix shows the salmonella serotypes cultured in the Public Health Laboratory Service from 1954 to 1962.

Partly due to the publication of Kovacs, *Med. J. Aust.*, April 25th, 1959, and the work done in this laboratory on desiccated coconut, the countries producing desiccated coconut realise the importance of the introduction of hygienic measures in the preparation of this material. In fact in 1962 only 11 Salmonellae were isolated from coconut samples received and in the latter part of the year all samples of desiccated coconut were free from Salmonellae.

Shigella.—To avoid the use of ineffective drugs, strains were investigated on their sensitivity. (See Table XI Appendix.)

Due to demands of routine work large scale investigations could not be done in this unit during 1962.

C. *Mycology*

The work is summarised in Table II which shows a continuation of the fast upward trend of volume of work. The work done in 1962 was double that done in 1961. In 1962 Nocardia was isolated from the sputum of a patient, the first case of nocardiosis in Western Australia, and the fourth case reported in Australia. It is the first in Australia and one of the very few on record as being identified prior to the death of the patient.

Candida infections appear to be common in the Perth area. This organism is often recovered from individuals with vaginal infections and also seems to be a common cause of paronychia. Also worthy of note is the occurrence of Candida in faecal specimens : this applies to adults as well as to children and is often associated with symptoms. The recovery of Candida from the sputum is a common event but only in a very few of such cases is the organism acting as a pathogen.

Microsporum canis is another fungus very common in the Perth area where it is at present the chief pathogen in Tinea capitis infections. During the year many cases were also seen of Tinea versicolor which seems to be widespread throughout Western Australia.

During 1962 Trichophyton mentagrophytes was found among guinea pigs in the Public Health Animal Breeding Station : the infection seems to have been imported with guinea pigs from Melbourne. It caused much disease among the animals and in addition was found in lesions on three workers who had handled infected straw.

Otitis externa survey.—In the otitis externa survey carried out for the Australian College of General Practitioners, 32 specimens were examined in the Mycology Department and from four of these fungi were isolated, viz., two Candida and one each of Aspergillus and Scopulariopsis.

D. *Mycobacterial Investigations* (summarised in Table IIIA)

The steady increase in work is an indication of the extra work necessitated by the increasing proportion of individuals infected with or harbouring the " atypical " mycobacteria. This increase is shown in Table IIIB from which it will be seen that the "atypical" series at the end of 1962 had reached a total of 1,357 isolations, one of the largest groups in existence.

From specimens received 7·3 per cent. were positive, see Table A below.

For the first time in this laboratory seven unclassified photochromogenic strains, M. Kansasii, were cultured from human material. A further five Myco. fortuitum strains were obtained from the same source. For the occurrence of unclassified mycobacteria, see Table IIIB.

Table A

MYCOBACTERIA LABORATORY

Summary of work done 1962 :—

No. of specimens	17,553	
No. of cultures	16,924	
No. of positive cultures	1,235	= 7·3%
No. of strains received for investigation	120	
No. of confirmation tests	1,047	
No. of sensitivity tests : direct	502	
No. of sensitivity tests : indirect	1,395	
No. of guinea pigs used	1,130	
No. of rabbits used	49	
No. of chickens used	22	
No. of mice used	[redacted]	
No. of smears for M. leprae	2	
No. of examinations	37,280	

Kirchner medium with 0·075 per cent. agar proved the most efficient culture medium and by using two tubes of this medium it was possible to culture almost 95 per cent. of the total positive findings. The solid media, Gottsacker and Blood media, showed considerable variation in results.

Sensitivity testing was done on 1,897 strains. Besides the indirect test the direct sensitivity was performed on 502 microscopically positive specimens. Sensitivity tests on patients on treatment were repeated every three months.

A micro method for catalase and peroxidase tests was introduced ; this method is now used routinely.

At present four safety hoods are installed in the laboratories and it is proposed to introduce more safety hoods to give maximum protection to the staff working with mycobacteria.

E. *Virology*

The work done in 1962 is detailed in Table IV. This represents a 35 per cent. increase compared with the work done in 1961. It is to be regretted that a substantial proportion of the work was pointless in that the paucity of the specimens received very often would have militated against our reaching any final conclusions. The complaints voiced in the 1961 Report are still true. With the exception of small numbers of viruses such as the Arbor group, transmission of viral infections is from man to man and it is to be presumed that viruses survive and maintain themselves during quiescent phases as lodgers on seemingly healthy individuals. Therefore the recovery of a virus from any patient is no definite proof that the virus concerned is responsible for the illness from which the patient may be suffering. The only really satisfactory method is to recover a virus and at the same time to show a significant rise in antibody titre to that virus in serum samples taken early and late in the illness. It is to be regretted that only in a minority of cases do we receive the minimum necessary specimens. It is especially difficult to establish any causal relationship between ubiquitous viruses and minor illnesses.

The question of supplies of viral reagents remain as unsatisfactory as before with only limited ranges available at high cost from foreign sources. Until reagents are freely available virology work can only be carried out in very large central laboratories and even then such investigations will be extremely expensive, laborious, and incomplete.

Among the more interesting investigations in 1962 was the finding of Coxsackie B myocarditis in two adults : although this organism was well-known as a cause of myocarditis in infants it had not hitherto been reported as a cause of myocarditis in adults. Also, of six children showing myocarditis one gave serological changes strongly suggesting a Coxsackie B infection.

Among investigations undertaken were the following :—

Bronchiolitis Survey, Children's Hospital.—Specimens were received from 33 patients but paired sera were obtained from only 15 of them. Nine viruses were grown from the throat washings, viz., two as yet unidentified, three of the ECHO group, three of the Coxsackie group, two of them being B type, and one respiratory syncitial virus. Only the RS virus showed a significant rise in antibody titre and it is possible that all the others were an incidental finding unrelated to the child's condition.

Diarrhoeal Diseases Survey.—Stool specimens were received from 47 children during an attack of summer diarrhoea : a virus was recovered from only two of the patients, one being an ECHO and the other a Coxsackie A virus. There was no serological proof of whether or not these organisms were responsible for the diarrhoea. This relatively poor return is in keeping with findings in similar investigations in other parts of the world.

Fly Survey.—A small test investigation was made with 14 batches of trapped flies to see if virus could be grown from the macerated material. No virus was recovered but the amount of material was very small and the experiment is to be repeated on a proper scale. The aim of the investigation is not to investigate arbor viruses but only to investigate the possibility that the fly is a simple mechanical carrier of viruses.

5. *Biochemistry*

The work done during the year is summarised in Table V appendix. There was a 50 per cent. increase in work done as compared with 1961. In the last 20 years the biochemistry department has grown from its Cinderella status to being one of the bigger and more important laboratory departments and it is in this branch of laboratory work that the biggest extension is to be expected, not only by increasing use of present tests but by the introduction of newer tests, especially the enzyme tests. In fact in this connection Bodansky, one of the United States of America authors, predicts that large-scale central units may have to be built in a central position in each large centre of population for the express purpose of carrying out enzyme tests and transmitting the results by teleprinter to the hospital concerned ! In a few years the enzyme tests have grown fivefold and are still steadily increasing in numbers of new tests.

This increase in biochemistry work poses a major problem in all laboratories and it is probable that the reintroduction of clinical side room investigations, as recommended previously, would help considerably to lighten the load on the biochemistry department which at present is clogged with work which could easily and readily be carried out on the wards, e.g., the testing of stools for occult blood.

Polarographic and chromatographic equipment arrived in late 1962 but are not yet set up. It is hoped that these methods of investigation will provide surer methods of analysis for certain tests than are those at present in use.

Industrial health investigations continue to grow in number and in variety.

The making of standard reagents for all the branch laboratories is one major responsibility of the central biochemistry department. This is a heavy load especially in view of the growing work of the branch laboratories and the growing number of such laboratories. The time will soon come when this work will have to be split off from the routine work of the biochemistry department much in the same fashion as media-making is now split off from the bacteriology department.

6. *Haematology*

The work done in the haematology department is summarised in Table VI appendix. The work done in 1962 shows a 36 per cent. increase over work done in 1961.

Like the biochemistry department, the department of haematology would benefit greatly from the reintroduction of a clinical side room on each hospital floor. It is not the true function of the haematology department to carry out simple ward procedures such as the pre-operative estimation of the haemoglobin in surgical patients.

Investigations continue on the various methods of estimating prothrombin levels using two major methods in parallel, namely, Quick's method and Owren's method. It is claimed that the latter method tests several of the major factors in coagulation and will detect deficiency of any one of these factors whereas it is claimed that although the Quick's test measures only the level of one or two factors all other factors are affected equally in any abnormality excepting for rare cases and therefore in practice the Quick's test is sufficient : certainly Quick's test is much easier and Owren's test would require to show itself much superior before it could be adopted as a routine. Tests have also begun on one other method.

During the year there was one striking illustration that no matter how efficient is a transfusion department and how complete its investigations there still remain a small number of individuals for whom blood transfusion can prove a tragedy : this viewpoint is more and more creeping into medical literature. The patient was a woman aged 60 with a history of having received two pints of blood in 1957. She required lobectomy right lung : during and immediately after the operation she was given a total of six pints of blood which appeared fully compatible by full methods of testing. Three days later her condition greatly worsened with indications of vascular haemolysis, e.g., a high serum bilirubin level, a positive Schumm's test, and a positive direct Coombs' reaction. On that day a request was made for more blood for transfusion and of 100 pints tested only three were found compatible. The patient died and subsequent investigations showed that in addition to two weak antibodies she had a potent anti-Kidd antibody in her serum. Attempts are now being made to trace the original donors who gave the blood in 1957 and in the meantime it is assumed that at the time of the operation the patient must have had a very weak anti-Kidd antibody in her serum and this antibody although too weak to have been detected originally must have risen very quickly so much so that within three days it was at a level sufficient to lyse part or all of the six pints of blood she had received.

7. *Serology*

The work of this section is set out in Table VII.

The salient points from the Serology Laboratory during 1962 were :—

(a) A general increase in work of 40 per cent. over 1961.

(b) A contribution to surveys at Cundeelee Mission, Claremont Mental Hospital and a series of bronchiolitis cases.

(c) The Senior Technologist's absence abroad for nine months on Long Service and study leave.

(a) *Volume of Work*

The most striking increase in work was in investigation of rheumatic diseases. The Rose and Ball test has been used by us in varying forms for eight years but all our methods have relied on sheep erythrocytes as the indicator. We have been conscious of a lack of uniformity of results due to different batches. As a more stable indicator we introduced latex particles here in January, 1962, using American material and Goften's modification of the method of Singer and Plotz.

An unexplained discrepancy was noted in 2·2 per cent. of the 457 cases tested by both methods during the year (0·88 per cent. were " positive Rose and Ball—negative Latex " and 1·32 per cent. were " negative Rose and Ball—positive Latex ").

The two methods will continue to be run in parallel in the hope of one being clearly superior in sensitivity and specificity.

The serology of venereal diseases has again increased. We continue to report the results of gonococcal complement fixation tests with some misgiving because of the technical uncertainties of the test and the difficulty of interpretation.

(b) *Surveys*

Late in 1962, we commenced work on a series of bloods from 121 natives at Cundeelee Mission. This was primarily to produce serological evidence of treponemal or neisserian diseases, if any. Other sections of the laboratories (haematology and biochemistry) also became involved, and at the end of 1962, laboratory work was still proceeding.

Three hundred and seventy-nine blood specimens from patients at Claremont Mental Hospital were tested against T.A.B. antigens to determine the number of vaccinated and unvaccinated patients. Fifty-eight per cent showed T.A.B. reaction.

We co-operated with the Virus Laboratory and the Princess Margaret Hospital in a small " Bronchiolitis " survey.

Eighteen sera were tested against Respiratory Syncytial Virus, Adenovirus Group, Influenza A, Influenza B, Parainfluenza I, Parainfluenza II, Parainfluenza III, Coxsackie B4, ECHO 9, ECHO 11, ECHO 20, ECHO 28, Psittacosis and Coxiella burnetii (Q Fever).

(c) *Senior Technologist's absence*

The Senior Technologist (Serology) was abroad from March to December 1962. During a tour of the British Isles, the Continent and the U.S.A., she spent a total of two months working at or visiting the laboratories at the Belvedere Hospital, the Royal Infirmary and Ruchill Hospital, Glasgow ; Queen's University, Belfast ; Wellcome Institute (Leptospirosis) and the V.D. Reference Laboratory, London ; and the Central Public Health Laboratories, Colindale ; the Toxoplasmosis Reference Laboratory at Leeds ; Forensic Laboratories at New Scotland Yard, London and Glasgow.

General

Police Blood Alcohol Outfits

For four years outfits have been prepared in this laboratory for the collection and forwarding of blood for blood alcohol estimation for the police department. In co-operation with the Crown Law Department, the Government Chemical Laboratories and the Police Department, a new outfit was designed.

Medico-legal

Serology Laboratory assisted the Police Department with laboratory investigations into five cases of death by violence, 20 sex offences and three miscellaneous enquiries.

Visits

During the year the Principal Technologist visited all country laboratories (except Derby) at least once.

In December he visited Melbourne and Sydney, calling at Commonwealth Serum Laboratories, Melbourne : Public Health Laboratories, Melbourne, and the Laboratories at Footscray and District Hospital, Melbourne.

8. *Department of Morbid Anatomy*

The work done in 1961 is summarised in Table VIII appendix. Each of the sections of the morbid anatomy department showed a marked rise in the amount of work done in 1962 compared with the work of the previous year. The over-all increase in work is 100 per cent.

The Histopathology work is heavy in amount and very varied in nature. This work is at present being carried on in a neighbouring hospital the authorities of which have kindly allowed us to use their laboratory facilities.

Exfoliative cytology continues to be a useful diagnostic tool, greatly increasing in amount and also increasing in the variety of specimens sent for investigation.

IV.—BRANCH LABORATORIES

The work of the branch laboratories in 1962 is summarised in Table 1B appendix. All of these laboratories continue to show increased work, some growing faster than others. This increase in work represents an even greater demand on the technologists in charge who are forced to work long overtime hours to keep up to date. We continue to increase laboratory staffs to try to keep up but the growth of the work is so fast that recruitment always lags behind growth.

V.—RESEARCH

The research being carried out is essentially of a practical nature. In the text above reference is made to the results of certain small research projects, e.g., external otitis, summer diarrhoea, fly surveys, etc. These *ad hoc* projects are additional to the major research projects such as Salmonella investigations into foods for exports and imports, investigation into mycobacterial infections, and investigations into coronary heart disease.

VI.—PUBLICATIONS

During the year the following papers were published by members of the laboratory staff :—

(1) Dr. Kovacs published the following papers :—

(a) " Nichtklassifizierte Mykobakterien ", *Zentral. f. Bakt. Parasitenkunde, Infekt. und Hyg.* 1, Orig. 184.

(b) " The Problem of Battey Disease in Western Australia and a Possible Reservoir ", *Beit. z. Klinik der Tuberkulose*, v. 125, No. 5, (349–354).

(c) " New Concepts Regarding the Significance of Tuberculin Sensitivity with Special Reference to the Problem of Low-degree Sensitivity ", Proc. XVIth Internat. Tuberculosis Conference, Toronto, 10–14th September, 1961 (419–421).

(2) Dr. Laurie :—

(a) In collaboration with Dr. J. D. Woods, Assistant Physician, Fremantle Hospital, Fremantle. " Interarterial Coronary Anastomoses in Three Race Groups ". *Lancet*, i (13–17).

(b) In collaboration with Dr. W. J. Smith, Assistant Physician, Perth Chest Hospital, Shenton Park. " Coxsackie Virus Type B4 ". *Med. J. Aust.*, v. II, No. 3 (108–109) Letter to the Editor.

VII.—ACKNOWLEDGEMENTS

We still remain indebted to many of our colleagues and to several Government departments which have helped us during the year, especially the Repatriation Department and the Mental Health Services of Western Australia.

Within the laboratory service the staff have worked well and uncomplainingly. I am indebted to all of them and particularly to my colleagues Dr. Kovacs and Mr. Drummond.

Table 1A

PUBLIC HEALTH LABORATORIES—CENTRAL LABORATORIES

SUMMARY OF WORK DONE—1962

Laboratory Sections	Source				1962 Total	1961 Total	1962 Increase %
	State	Common-wealth	Hospital	Others			
Microbiology :							
Tests	30,682	3,723	4,206	963	39,574	39,336	0·6
Unit Values	295,526	25,769	28,848	6,935	357,078	359,475	....
Tuberculosis :							
Tests	....	36,155	....	....	36,155	28,558	26·6
Unit Values	....	219,849	....	....	219,849	176,946	24·2
Serology :							
Tests	38,325	2,467	544	1,405	42,741	32,166	32·9
Unit Values	194,556	13,184	4,268	14,755	226,763	161,015	40·8
Haematology :							
Tests	12,081	6,849	17,176	5,771	41,877	30,660	36·5
Unit Values	44,233	25,744	62,550	21,889	154,416	108,584	42·2
Biochemistry :							
Tests	3,699	3,491	6,262	1,020	14,472	9,616	50·5
Unit Values	42,511	37,842	46,287	11,179	137,819	100,455	37·1
Histopathology :							
Tests	13,570	1,494	1,256	1,680	18,000	9,002	100·0
Unit Values	135,010	12,244	10,353	16,810	174,417	87,423	99·5
Virology :							
Tests	30,309	....	....	....	30,309	22,366	35·5
Totals :							
Tests	128,666	54,179	29,444	10,839	223,128	171,704	29·9
Unit Values	711,836	334,632	152,306	71,568	1,270,342	993,898	27·8

Table 1B

PUBLIC HEALTH SATELLITE LABORATORIES—SUMMARY OF WORK DONE 1962

Laboratory Sections	Source							1962 Total	1961 Total	1962 Increase %
	Albany	Bunbury	Derby	Geraldton	Narrogin	Northam	Wooroloo			
Bacteriology—										
Tests	5,549	4,499	4,224	1,560	2,178	1,008	1,286	20,304	15,977	27·1
Haematology—										
Tests	6,681	8,914	4,637	4,164	3,608	3,520	4,142	35,666	22,385	59·3
Biochemistry—										
Tests	1,549	3,106	797	949	1,149	488	1,653	9,691	6,488	49·4
Total—										
Tests	13,779	16,519	9,658	6,673	6,935	5,016	7,081	65,661	44,850	46·4
Unit Values	54,997	166,076	67,176	42,991	32,668	25,411	31,115	420,434	318,839	31·9
Increase 962—										
Tests	75·1%	1·4%	49·5%	55·4%	Opened	29·3%	16·8%			
Unit Values	59·6%	3·4%	30·1%	57·4%	in March	23·9%	28·0%			

Table II

GENERAL MICROBIOLOGY AND MYCOLOGY—WORK DONE 1962

Work Done	Source				1962 Total	1961 Total	1962 Increase
	State	Common-wealth	Hospital	Others			
General Bacteriology :							%
Animal Inoculations	173	3	....	...	176	716	....
Blood Specimens	684	193	24	1	902	345	161·5
C.S.F. Specimens	60	4	11	19	94	147	....
Faeces Specimens	120	1	....	....	121	104	16·4
Foodstuffs : Fresh	241	....	....	....	241	749	....
Foodstuffs : Frozen or Tinned	53	....	....	....	53	9	6·0
Sensitivity Tests	4,402	721	1,027	331	6,481	7,293	....
Serous Effusions	30	110	148	8	296	407	....
Sputum	883	1,187	1,236	18	3,324	4,010	....
Swabs, All Sources	1,035	615	467	149	2,266	3,632	....
Urine Examinations	402	783	1,192	392	2,769	4,281	....
Vaginal Specimens	375	26	17	...	418	423	....
Venereal Diseases	1,691	19	2	....	1,712	1,242	37·8
Water	207	....	....	....	207	....	....
Others	1,624	21	60	44	1,749	1,663	5·1
Total :							
Tests	11,980	3,683	4,184	962	20,809	25,021	....
Unit Values	110,424	25,390	28,658	6,931	171,403	193,089	...
Water and Sewerage Surveys :							
Tests	7,520	8	....	....	7,528	5,579	34·9
Unit Values	72,836	80	....	....	72,916	52,685	38·4
Mycology Examinations :							
Tests	7,154	....	....	....	7,154	4,729	51·2
Unit Values	44,688	....	....	..	44,688	22,713	96·8
Salmonella :							
Animal Inoculations	....	....	....	...	....	183	....
Blood Specimens	....	....	....	..	....	1	....
Faeces Specimens	2,163	32	22	1	2,218	1,163	90·7
Foodstuffs : Fresh	865	....	....	..	865	1,596	....
Foodstuffs : Frozen or Tinned	440	....	....	....	440	471	....
Fertilisers	1	....	....	....	1	13	....
Sensitivities	185	....	....	....	185	40	4·5
Sputum	....	....	....	....	....	15	....
Others	374	....	....	....	374	525	....
Total :							
Tests	4,028	32	22	1	4,083	4,007	1·9
Unit Values	67,578	299	190	4	68,071	90,988	....
GRAND TOTAL :							
Tests	30,682	3,723	4,206	963	39,574	39,336	0·6
Unit Values	295,526	25,769	28,848	6,935	357,078	359,475	....

Table III

MICROBIOLOGY—TUBERCULOSIS SECTION—EXAMINATIONS IN 1962

Type of Examinations		1962 Total	1961 Total	1962 Increase
Sputum :				%
Direct Smears	54			
Centrifuged Deposits	15,213			
Cultures	15,206	30,569	21,291	43·6
Direct Guinea Pig Inoculations	96			
Gastric Contents :				
Centrifuged Deposits	148			
Cultures	629	1,094	1,372	....
Direct Guinea Pig Inoculations	317			
Laryngeal Swabs :				
Centrifuged Deposits	14			
Cultures	15	35	31	12·9
Direct Guinea Pig Inoculations	6			
Pleural Fluids :				
Sulas	4			
Centrifuged Deposits	117	331	436	....
Cultures	118			
Direct Guinea Pig Inoculations	92			
Bronchial Lavage :				
Centrifuged Deposits	155			
Cultures	155	395	691	....
Direct Guinea Pig Inoculations	85			
C.S.F. :				
Centrifuged Deposits	17			
Cultures	17	50	26	92·3
Direct Guinea Pig Inoculations	16			
Urine :				
Centrifuged Deposits	483			
Cultures	485	1,344	1,466	....
Direct Guinea Pig Inoculations	376			
Miscellaneous :				
Centrifuged Deposits	325			
Cultures	329	854	1,631	....
Direct Guinea Pig Inoculations	200			
Virulence Tests		88	270	....
Sensitivity Tests		1,395	1,344	3·8
Total Examinations		36,155	28,558	26·6

Table IIIB

UNCLASSIFIED MYCOBACTERIA ISOLATED FROM 363 PERSONS

(GROUP III—264 PERSONS)

Specimen	1955–1956			1957–1958			1959–1960			1961			1962				Total
	Group			Group			Group			Group			Group				
	II	III	IV	II	III	IV	II	III	IV	II	III	IV	I	II	III	IV	
Sputum	....	....	18	3	13	2	24	341	14	21	388	31	5	12	311	17	1,200
Bronchial Lavage	....	....	....	....	....	....	....	12	1	....	....	1	....	....	1	2	17
Laryngeal Swabs	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	2
Gastric Contents	....	1	26	2	1	8	4	22	2	1	4	2	....	....	5	....	78
Pus	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1
Urine	....	....	4	....	....	....	....	5	1	2	....	....	....	....	2	....	14
Resected Lung Tissue	....	....	....	....	....	....	....	3	....	....	2	....	....	....	1	....	6
Lung Tissue	....	....	....	....	....	....	....	8	....	....	7	....	....	....	11	....	26
Lymph Node (Taken at P.M.)	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	1
Bone Marrow (Taken at P.M.)	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	1
Faeces	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1
Pleural Fluid	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1
Cervical Gland	....	....	....	....	....	....	....	3	....	....	....	....	....	2	3	....	8
Semenal Fluid	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	1
Total	....	1	48	5	15	10	28	398	18	24	404	34	5	14	334	19	1,357
GRAND TOTAL	....		49			30			444			462				372	1,357 (Gr. III, 1,152)

Table IV

MICROBIOLOGY—VIRUS SECTION—WORK DONE 1962

Work Done	1962 Total	1961 Total	1962 Increase
			%
Preparation of Inocula	780	578	34·9
Tissue Culture	10,966	7,406	48·1
Egg Inoculation	4,944	4,546	8·8
Animal Inoculation	3,994	4,549	....
Neutralisation	2,945	1,494	97·1
Haemadsorption	738	225	228·0
Haemagglutination and Inhibition	2,292	1,206	90·0
Sterility Tests	877	383	129·0
Others	2,773	1,979	140·1
Total	30,309	22,366	35·5

Source	*Number of Tests*
Princess Margaret Hospital	8,013
Private	5,302
Public Health Department	3,950
Royal Perth Hospital	3,172
Perth Chest Hospital	1,823
Northampton	858
Perth Chest Clinic	753
Port Hedland	259
Roebourne	236
St. John of God Hospital	213
H.M.A.S. "Leeuwin"	193
Albany Hospital	160
Kalgoorlie	146
Norseman	128
Fremantle Hospital	117
Broome	60
Carnarvon	59
Collie	57
Derby	44
University	36
Shark Bay	32
Wyndham	21
Government Pathologist	7
Special Investigation—	
Diarrhoeal Disease Project	849
Trachoma	3,710
Fly Survey	111

Table V

BIOCHEMISTRY DEPARTMENT—1962

Work Done	Source				1962 Total	1961 Total	1962 Increase
	State	Common-wealth	Hospitals	Others			
							%
Serum/Plasma Tests	2,759	2,417	4,774	909	10,859	6,341	71·3
C.S.F. Tests	78	7	41	45	171	213	....
Gastric Contents Examination	7	2	9	....	18	5	3·5
Effusions	53	46	26	....	125	168	....
Urine Examinations	130	99	121	36	386	376	2·7
Metabolic Tests	7	18	42	5	72	103	....
Others (including blood collection)	665	902	1,249	25	2,841	2,410	17·9
Total—							
Tests	3,699	3,491	6,262	1,020	14,472	9,616	50·5
Unit Values	42,511	37,842	46,287	11,179	137,819	100,455	27·9

Table VI

HAEMATOLOGY DEPARTMENT—WORK DONE 1962

Tests Done	Source				1962 Total	1961 Total	1962 Increase
	State	Commonwealth	Hospital	Others			
Red Cells—							%
Total levels	602	232	663	394	1,891	1,476	28·1
Haematocrit	922	579	1,635	451	3,587	2,641	35·8
Absolute Values	2,490	1,028	2,560	1,219	7,297	5,393	35·3
Sedimentation	637	576	1,294	353	2,860	2,220	28·8
Film Examination	989	569	1,534	401	3,493	2,364	47·8
Fragility Tests	1	1	4	1	7	1	....
Reticulocytes	9	29	144	2	184	66	178·8
Stipple Cells	....	....	....	....	....	2	....
Hb. Levels	1,201	592	1,916	476	4,185	2,901	44·3
White Cells—							
Total	696	637	1,586	410	3,329	2,655	25·4
Differential	808	637	1,415	377	3,237	2,588	25·1
L.E. Cells	11	18	53	7	89	41	117·1
Blood Grouping—							
Major	472	75	259	457	1,263	871	45·0
Minor	472	75	259	457	1,263	870	45·0
Compatibility	42	324	636	....	1,002	503	99·2
Rh Antibodies	27	5	....	320	352	....	....
Bone Marrow Examination	15	10	14	..	39	31	25·8
Coagulation Tests—							
Prothrombin Time	305	180	690	68	1,243	1,004	23·8
Bleeding Time	6	12	35	....	53	33	60·6
Clotting Time	6	11	41	....	58	50	16·0
Clot Retraction	2	5	10	....	17	10	70·0
Others (including Blood Collection)	2,368	1,254	2,428	378	6,428	4,940	30·1
Totals—							
Tests	12,081	6,849	17,176	5,771	41,877	30,660	36·5
Unit Values	44,233	25,744	62,550	21,889	154,416	108,584	42·2

Table VII

SEROLOGY DEPARTMENT—WORK DONE 1962

Work Done	Source				1962 Total	1961 Total	1962 Increase
	State	Commonwealth	Hospital	Others			
							%
Treponemal Tests	21,685	1,448	212	....	23,345	18,270	27·8
Gonococcal Tests	2,417	157	16	....	2,590	1,529	69·4
Hydatid Tests	44	11	11	....	66	55	20·0
Bacterial Agglutinations	6,265	216	54	....	6,535	4,684	39·5
Rheumatic Tests	1,059	246	65	108	1,478	670	120·6
Leptospiral Tests	2,185	88	12	....	2,285	2,842	....
Viral, Rickettsial and Protozoal Tests	3,299	273	149	....	3,721	2,051	81·4
Hormone Tests	141	17	19	1,297	1,474	1,301	13·3
Medico-Legal Tests	714	....	....	....	714	520	37·3
Others	516	11	6	....	533	244	118·4
Totals—							
Tests	38,325	2,467	544	1,405	42,741	32,166	32·9
Unit Values	194,556	13,184	4,268	14,755	226,763	161,015	40·8

Table VIII

HISTOPATHOLOGY DEPARTMENT—WORK DONE 1962

Work Done	Source				1962 Total	1961 Total	1962 Increase
	State	Commonwealth	Hospital	Others			
							%
Exfoliative Cytology	1,421	912	739	....	3,072	2,129	44·3
Autopsies	75	....	....	....	75	56	33·9
Biopsies	5,879	539	515	1,678	8,611	3,984	116·1
Tissue Examination	5,458	....	....	....	5,458	2,589	110·8
Others	737	43	2	2	784	244	221·3
Totals—							
Tests	13,570	1,494	1,256	1,680	18,000	9,002	100·0
Unit Values	135,010	12,244	10,353	16,810	174,417	87,423	99·5

Table IX

SALMONELLA SEROTYPES ISOLATED 1962

Salmonella Serotype	Human Source Faeces		Other Sources							
	Cases	Isolations	Egg Pulp	Egg Yolk	Strains for Serotyping	Ceylon Coconut	Philippine Coconut	Moore Swabs	Cats	Total
S. typhi	3	4	....	....	3	....	....	....	....	7
S. typhimurium	29	59	5	....	19	1	....	....	....	84
S. senftenberg	4	7	....	....	....	....	1	....	....	8
S. adelaide	4	4	2	....	....	....	....	....	1	7
S. bredeny	1	1	....	....	....	....	....	....	....	1
S. charity	2	2	....	....	....	....	....	....	....	2
S. urbana	3	3	....	....	1	....	....	....	....	4
S. orion	4	4	....	....	....	....	....	....	....	4
S. anatum	1	1	3	....	1	....	....	....	1	6
S. ball	1	1	....	....	....	....	....	....	....	1
S. chester	1	2	....	....	1	....	....	....	....	3
S. onderstepoort	1	1	....	....	....	....	....	....	....	1
S. muenchen	8	8	....	....	3	....	....	....	....	11
S. hvittingfoss	2	2	....	....	....	....	....	....	....	2
S. wandsworth	5	5	....	....	2	....	....	....	....	7
S. saint paul	1	1	....	....	1	....	....	....	....	2
S. eastbourne	3	5	....	....	....	....	....	....	....	5
S. newington	2	4	....	....	....	....	....	....	1	5
S. oranienburg	....	....	14	....	1	....	....	....	....	15
S. bovis morbificans	....	....	29	....	1	....	....	....	....	30
S. derby	....	....	22	....	....	....	....	....	....	22
S. pullorum	....	....	38	29	....	....	....	....	....	67
S. muenster	....	....	1	....	....	....	....	....	....	1
S. give	....	....	....	....	3	....	....	....	1	4
S. cholerae suis	....	....	....	....	2	....	....	....	....	2
S. newport	....	....	....	....	1	....	....	....	....	1
S. ferlac	....	....	....	....	....	6	....	....	....	6
S. litchfield	....	....	....	....	....	1	....	....	....	1
S. java	....	....	....	....	....	1	....	....	....	1
S. cubana	....	....	....	....	....	....	1	....	....	1
S. alsterdorf	....	....	....	....	....	....	....	1	....	1
S. blukwa	....	....	....	....	....	....	....	1	....	1
S. wandsbek	....	....	....	....	....	....	....	2	....	2
S. unidentified	7	7	1	....	....	....	....	....	....	8
Number of Strains	....	121	115	29	39	9	2	4	4	323

Salmonella Strains for 1962 : 323

Table X

Public Health Laboratory Service, Perth, Western Australia

SALMONELLA ISOLATIONS 1954–1962

Salmonella Serotypes	Human Source					Moore Swabs			Other Sources									Strains for Serotyping		Total
																		Source		
	Cases	Faeces	Blood	Sputa	Pleural Fluid	River	Reservoir	Sewage	Egg	Coconut	Fertilizer	Animal Glands	Cats	Rats	Flies	Kangaroo Meat	Birds	Human	Animal	
S. typhimurium	93	160	....	....	....	10	....	6	255	14	10	29	1	1	....	....	....	22	11	519
S. typhi	58	111	21	....	....	....	....	28	....	....	....	....	....	....	....	....	....	7	....	167
S. senftenberg	9	12	....	....	....	....	....	2	3	105	14	....	....	....	....	....	....	....	....	136
S. oranienberg	1	1	....	....	....	1	....	....	74	1	7	1	....	....	....	....	....	....	1	86
S. derby	5	6	....	....	....	1	....	....	45	....	7	10	....	....	....	....	....	1	....	70
S. bovis morbificans	9	15	....	....	....	1	....	2	45	....	1	4	....	....	....	....	....	2	....	70
S. paratyphi B.	2	2	2	....	....	....	....	4	....	34	....	....	....	....	....	....	....	2	....	44
S. adelaide	8	8	....	....	....	....	....	....	16	....	6	3	2	....	....	2	....	....	....	37
S. meleagridis	4	4	....	....	....	....	....	9	8	....	15	1	....	....	....	....	....	....	....	37
S. worthington	2	2	....	....	....	....	....	....	8	....	23	....	....	....	....	....	....	....	....	33
S. anatum	9	9	....	....	....	1	....	....	10	....	5	18	1	....	1	....	....	1	....	46
S. give	1	5	....	....	....	....	....	....	4	....	1	19	1	....	....	....	....	1	2	33
S. muenchen	14	14	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....	5	1	22
S. newport	5	5	....	....	....	....	....	....	1	7	1	4	....	....	....	....	....	1	....	19
S. bareilly	....	....	....	....	....	....	....	....	1	18	1	....	....	....	....	....	....	....	....	20
S. ferlac	....	....	....	....	....	....	....	....	....	33	....	....	....	....	....	....	....	....	....	33
S. cubana	....	....	....	....	....	....	....	....	....	1	21	....	....	....	....	....	....	....	....	22
S. perth	....	....	....	....	....	....	....	....	....	25	....	....	....	....	....	....	....	....	....	25
S. chittagong	....	....	....	....	....	....	....	....	....	17	....	....	....	....	....	....	....	....	....	17
S. cholerae	2	....	1	12	3	....	....	....	....	....	....	....	....	....	....	....	....	1	2	19
S. kotte	....	....	....	....	....	....	....	....	....	6	....	....	....	....	....	....	....	....	....	6
S. waycross	....	....	....	....	....	....	....	....	....	13	....	....	....	....	....	....	....	....	....	13
S. angoda	....	....	....	....	....	....	....	....	....	10	....	....	....	....	....	....	....	....	....	10
S. nyborg	....	....	....	....	....	....	....	1	5	....	3	....	....	....	....	....	....	....	....	9
S. braenderup	....	....	....	....	....	....	....	....	....	1	7	....	....	....	....	....	....	....	....	8
S. bredeney	1	1	....	....	....	....	....	....	....	....	6	....	....	....	....	....	....	....	....	7
S. chester	2	3	....	....	....	....	....	....	2	1	....	3	....	....	....	....	....	4	....	13
S. newington	3	5	....	....	....	....	....	....	....	....	....	2	1	....	....	....	....	....	....	8
S. weltevreden	4	....	....	....	....	....	....	....	....	6	....	....	....	....	....	....	....	....	....	6
S. orion	4	4	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	1	....	9
S. taksony	....	....	....	....	....	....	....	....	....	....	7	....	....	....	....	....	....	....	....	7
S. cambridge	....	....	....	....	....	3	....	....	....	....	3	1	....	....	....	....	....	....	....	7
S. paratyphi A	3	2	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5
S. new brunswick	....	....	....	....	....	....	....	....	1	....	1	2	....	....	....	....	....	1	....	5
S. hvittingfoss	2	2	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	5
S. butantan	....	....	....	....	....	....	....	....	....	6	....	....	....	....	....	....	....	....	....	6
S. wandsworth	5	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	7
S. chingola	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	....	4
S. eastbourne	4	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6

Table X—*continued*

Public Health Laboratory Service, Perth, Western Australia

SALMONELLA ISOLATIONS 1954–1962—*continued*

Salmonella Serotypes	Human Source					Moore Swabs			Other Sources									Strains for Serotyping		Total
																		Source		
	Cases	Faeces	Blood	Sputa	Pleural Fluid	River	Reservoir	Sewage	Egg	Coconut	Fertilizer	Animal Glands	Cats	Rats	Flies	Kangaroo Meat	Birds	Human	Animal	
S. san diego	....	....	....	....	....	....	....	....	....	1	2	1	....	....	....	....	....	....	....	4
S. lexington	....	....	....	....	....	....	....	....	....	1	3	....	....	....	....	....	....	....	....	4
S. urbana	3	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	5
S. thompson	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	3
S. solna	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	3
S. orientalis	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	1	....	....	2
S. nchanga	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	2
S. wandsbek	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	2
S. litchfield	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	1
S. reading	1	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	2
S. rubislaw	1	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	2
S. ball	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	3
S. charity	2	2	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	3
S. amager	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	2
S. potsdam	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	1	....	....	....	2
S. saint paul	1	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	1	....	3
S. birkenhead	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	1	....	....	3
S. edinburgh	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	2
S. poona	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1
S. montevideo	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1
S. berta	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1
S. selandia	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1
S. kaapstad	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1
S. kentucky	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1
S. saarbruecken	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1
S. emmasted	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
S. fremantle	1	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	2
S. dahlem	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
S. muenster	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	2
S. blukwa	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1
S. java	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	1
S. tennessee	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	1
S. decatur	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1
S. alsterdorf	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1
S. onderstepoort	1	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....	2	....	....	4
S. enteritidis	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1
S. pullorum	....	....	....	....	....	....	....	....	781	....	....	....	....	....	....	....	....	....	....	781
Total	259	395	27	12	3	18	8	54	1,270	322	149	100	6	1	2	3	4	57	17	2,448

Table XI

SHIGELLA ISOLATIONS AND SENSITIVITY RESULTS—1962

Shigella Strains	No. of Strains	Strains Sensitive									
		Total Tested	Streptomycin	Chlorotetracycline	Oxytetracycline	Tetracycline	Chloramphenicol	Polymixin B	Neomycin	Furoxone	Sulphadiazine
Sh. flexneri type I	6	5	2	3	2	2	2	5	5	5	1
Sh. flexneri type II	7	7	5	4	4	4	5	7	7	7	2
Sh. flexneri type IV	1	1	....	1	1	1	1	1	1	1	....
Sh. flexneri type VI	1	....	....	..	....	....	....	....	....	....	....
Sh. boydii type II	21	16	13	13	13	13	13	16	16	16	7
Sh. schmitzi	1	1	1	1	1	1	1	1	1	1	1
Sh. sonnei	120	103	95	92	86	86	91	102	102	103	29
Total	157	133	....	....	....	....	....	....	....	....	....

Appendix III

TUBERCULOSIS CONTROL BRANCH

Annual Report for the Year Ended 31st December, 1962

There was a slight rise in the total number of cases notified to the Register over the figure for the previous year. This rise could be related to increased case finding through mass compulsory surveys. There was however, a higher proportion of pulmonary notifications with minimal disease ; 48 per cent. had minimal active lesions, as against 43 per cent. in 1961 and a level varying from 25 per cent. to 30 per cent. in the previous eight years. Cases originating from private medical practitioners have fallen, although there has been no reduction in the numbers of patients referred by them to clinics for investigation.

NOTIFICATIONS TO THE TUBERCULOSIS REGISTER

The 268 new cases were classified according to form of disease and infecting organism as follows :—

Form	Human Tuberculosis	Bovine Tuberculosis	Atypical (anonymous) Mycobacteria
Pulmonary (adult type)	222	....	11 { Group II—1; Group III—9; Mixed II & III—1
Pulmonary (childhood type)	4	....	....
Pleurisy with effusion	6	....	....
Non-Pulmonary :			
Glands	3	....	4 { Group II—2; Group III—2
Urogenital	9	1	....
Bone and Joint	7	....	....
Empyema	1	....	....

Persons with progressive disease due to atypical mycobacteria represented five per cent. of total notifications. Bovine infections are now rare ; less than one a year is seen.

The 12 notifications in the 0–15 age group represented 4·5 per cent. of the total. This seems unduly high until one analyses them further :—

Primary pulmonary lesions	4 cases	
Adult-type pulmonary lesions	1 case	(this child was bacillary negative)
Renal	1 case	
Glands—		
bacillary negative	2 cases	
Atypical Group II	2 cases	} all bacillary positive
Atypical Group III	2 cases	} all bacillary positive

Thus only five children presented with unequivocal active disease caused by M. Tuberculosis. For some years there has been a notable absence of the more serious forms of progressive tuberculosis in children.

Eleven per cent. were renotifications and this is unsatisfactory.

STATE OF THE REGISTER

The Register has been revised to conform with the criteria adopted in the Danish index ; that is, where tubercle bacilli have not been demonstrated for three successive years after treatment the patient's name is removed from the Register. This approximates to the five year inactivity period previously adopted as the standard.

The yearly audit resulted in the removal of 354 names—77 because of death, 18 transfers out, and 259 as sufficiently controlled. The present state of the Register is fully analysed in Table 4.

DEATHS

The 28 classified tuberculosis deaths were caused by :—

1. Progressive pulmonary infection with—		
(a) M. Tuberculosis	7	
(b) Atypical mycobacteria, Group III	7	(6 of these were Repatriation patients)
2. Cor pulmonale, extensive fibrosis and old healed tuberculosis	10	
3. Extrapulmonary tuberculosis	4	

BACTERIOLOGY

Just over 60 per cent. of newly notified cases were bacillary positive on initial investigation.

Excluding patients suffering from progressive atypical disease, there was only one example of primary resistance. This was in a young Italian who arrived in this country in July, 1960. Organisms cultured from his sputum were reported to be completely resistant to the standard anti-tuberculous drugs.

MASS COMPULSORY COMMUNITY SURVEYS

The third metropolitan survey is still in progress and will be finished by July, 1963. A careful check of electoral rolls was maintained and all persons not attending within the period specified by published notice were written to and requested to attend for X-Ray. Three persistent defaulters were prosecuted and each fined £5 with £3 costs. An 83 per cent. overall population cover was attained, most of the remaining 17 per cent. having produced evidence of previous X-Rays within the preceding 12 months. Tables 7 and 8 show the number of active tuberculosis cases detected since the survey began, case rates per thousand miniature films and age distribution. The higher rate amongst initial non-attenders is interesting, but may not have statistical significance.

The districts surveyed in 1962 were :—

City of Fremantle (including North Fremantle).
Town of East Fremantle.
Town of Melville.
Town of Mosman Park.
Shire of Peppermint Grove.
Town of Cottesloe.
Town of Claremont.
City of Nedlands.
City of Subiaco.
City of Perth (excluding Victoria Park and Carlisle Wards).

A resurvey of country centres will begin in July, 1963, starting in the Geraldton area.

SPECIAL GROUPS

Miners

Fifty new cases of silicosis and two of asbestosis were diagnosed, but only three new tuberculosis cases were notified amongst miners working in the industry. Thus dust control remains unsatisfactory. I hope that the low level of tuberculosis infection can be maintained, although past figures show wide fluctuations from year to year. In recent years all the active tuberculosis in miners in the industry has occurred in middleaged or older silicotics.

During 1962, routine cultures of sputum specimens from every miner diagnosed with uncomplicated silicosis failed to produce a single colony of M. tuberculosis. There were however, a few positive cultures of atypical mycobacteria.

Pensioners

As part of a plan to detect previously concealed cases in old and chronically sick persons, new grantees of Invalid and Aged Pensions have been circularized since May, 1962. The yield so far has been small ; one case being diagnosed among 2,773 pensioners who attended for chest X-Ray in response to the issue of 4,458 letters to the end of December. The thoroughness of Mass Surveys may account for the small yield.

Routine X-Rays of Hospital In- and Out-patients

Again the yield from this source was small. Most hospitals of any size are covered, excepting the Royal Perth. There is evidence that the yield would be larger if a minature film unit could be installed in that hospital.

Migrants

Of the Australian States (excepting A.C.T.) Western Australia has the highest proportion of population born outside Australia—22·3 per cent. at the June, 1961, Census. For the last five years the tuberculosis incidence in this group has been approximately 2½ times that of the Australian-born for males, and twice for females (See Tables 5 and 6). There has however, been a small, though significant, falling off in the incidence in both sexes, both in the Australian and non-Australian born. Poles, Greeks, Italians and British, in approximately that order, show the highest rates. British full-fare paying passengers are the only group not subject to pre-embarkation chest X-Ray. This is a factor in the high incidence amongst British arrivals.

Slightly more than half of all notifications in the non-Australian born are occurring more than 10 years after arrival here. Many undoubtedly arrive with inactive lesions which later break down and become active. The task of ensuring that this group is properly surveyed through regularly recurring mass compulsory community campaigns is not easy. Many, not being naturalized, cannot be checked through electoral rolls. Attempts are made to reach them through the co-operation of local migrant organizations.

Pre-embarkation chest X-Rays as a requirement for intending British full-fare paying passengers seem essential.

SKIN TESTING PROGRAMMES

Schools

As a case finding procedure this method produces little result. Very large programmes have therefore not been undertaken but in the last three years 25,000 schoolchildren were tested with the Heaf gun, using concentrated Old Tuberculin. Two were detected with minimal pulmonary tuberculosis. No cases of active tuberculosis were found amongst family contacts of tuberculin reactors. Children born outside Australia showed a significantly higher rate than the Australian-born in all age groups. Hyperreactors were given routine Isoniazid prophylaxis.

The unproductiveness of schools skin testing programmes in case finding can be ascribed to various factors, such as the effectiveness of mass compulsory surveys in weeding out active disease from the community ; again, by the time a child is detected as a tuberculin reactor the trail may be " cold," the adult source case—if there was one—having long since left the child's environment and become impossible to trace. Furthermore, only a small percentage of contact children appear to be infected by adults with minimal or even moderate active tuberculosis, and some escape infection by adults with very advanced lesions.

Checking of adult contacts of all positively reacting schoolchildren involves much unnecessary work, owing to the non-specificity of many of these reactions.

Comparative Tests

As well as single Heaf gun tests a large number of comparative skin tests have been done using different P.P.D.'s and tuberculins. Simultaneous testing by the Heaf gun method on one arm and 1/1,000 Old Tuberculin given intradermally on the other on 1,000 positive reactors shows no sharply defined relationship between the sizes of the two sets of reactions obtained. Reactions to a Battey-type PPD prepared by the Commonwealth Serum Laboratories from material from one of our patients with progressive pulmonary Battey disease, suggest that this is a weak antigen by comparison with an American PPD-B. Reactions were consistently $\frac{1}{4}$ to $\frac{1}{2}$ the size of those produced in the same subjects by the American antigen, and the latter therefore is now preferred for diagnostic purposes and for most epidemiological surveys. Further comparative skin testing with the various proteins available confirms the impression that many of the smaller reactions to Old Tuberculin are non-specific.

ATYPICAL (ANONYMOUS) MYCOBACTERIA

Organisms isolated from the 15 patients considered to have progressive atypical infection were uniformly resistant to standard antituberculous drugs. Many casual and intermittent isolations came from patients with other forms of chronic lung disease, *i.e.*, silicosis, bronchiectasis, pulmonary fibrosis. A Battey-type organism (Runyon Group III) was most commonly found.

Some patients with early progressive Battey-type disease appeared to respond to first-line antituberculous drugs, though the organisms in culture were uniformly resistant.

SUMMARY

The incidence of tuberculosis was at about the same level as in 1961, though the proportion of minimal cases has risen and is approaching 50 per cent.

Progressive atypical disease (mainly of the Battey-type) was five per cent. of the total.

The mortality rate is steady at about 3 per 100,000.

Breakdown of old apparently controlled disease in previously notified patients accounted for 11 per cent. of notifications.

The more serious forms of childhood tuberculosis are not being seen.

The main sources of new cases continue to be Mass Compulsory Surveys, Chest Clinics and Private Practitioners' patients.

Mass compulsory community surveys are showing a higher rate of cases amongst initial non-attenders. The overall rate is 1 for every 2,000 miniature films taken.

Tuberculin surveys of schoolchildren have proved practically barren as a case-finding method amongst the children and their family contacts, though they are valuable for prophylaxis and epidemiological purposes.

Primary resistance is negligible.

The incidence of tuberculosis amongst persons born outside Australia continues to be 2 to $2\frac{1}{2}$ times that of the Australian-born and one may reasonably expect this ratio to persist.

F. G. B. EDWARDS, B.A., LL.B., M.B., B.S.,

Director, Tuberculosis Control Branch.

(3)—78567

Table 1

TUBERCULOSIS—MAIN STATISTICAL FIGURES

Year	Mean Population 1,000s.	Notifications				No. on Register (Pulm.) at 31st Dec.	Prevalence per 100,000 (Pulm.)	Number Receiving T.B. Allowance at 31st Dec.	Deaths			Death Rate per 100,000	
		Pulm. (incl. Pleural effus.)	Non-Pulm.	Total	Pulm. per 100,000				Pulm.	Non-Pulm.	Total	Pulm.	All Forms
1950	558	586	18	604	104·8	2,100	376	515	125	3	128	22·4	22·9
1951	580	467	37	504	80·4	2,402	413	474	76	6	82	13·1	14·1
1952	601	508	49	557	84·5	2,574	428	396	75	7	82	12·5	13·6
1953	621	378	34	412	60·6	2,762	445	361	43	3	46	6·9	7·4
1954	640	348	34	382	54·3	2,769	432	326	57	4	61	8·9	9·5
1955	659	413	39	452	62·7	2,965	450	330	31	2	33	4·7	5·0
1956	677	424	44	468	62·6	2,900	428	264	43	3	46	6·3	6·8
1957	692	332	32	364	47·9	2,786	403	198	36	1	37	5·2	5·3
1958	706	355	24	379	50·3	2,726	386	213	22	4	26	3·1	3·4
1959	726	320	34	354	44·1	2,684	369	182	24	....	24	3·3	3·3
1960	731	296	34	330	40·5	2,388	327	148	29	1	30	4·0	4·1
1961	737	209	41	250	28·4	1,349	183	89	18	1	19	2·4	2·6
1962	755	243	25	268	32·2	1,333	177	90	24	4	28	3·2	3·7

Table 2

ANNUAL NOTIFICATIONS OF PULMONARY TUBERCULOSIS SHOWING STAGE OF DISEASE*

Year	Parenchymal Disease						Pleural Effusion		Total
	Minimal		Moderately Advanced		Advanced				
		%		%		%		%	
1952	122	24	275	54·1	101	19·9	10	2	508
1953	98	25·9	210	55·5	65	17·2	5	1·4	378
1954	96	27·6	178	51·1	74	21·3	....	....	348
1955	111	26·9	225	54·5	64	15·5	13	3·1	413
1956	127	38	217	51·1	72	17	8	1·9	424
1957	102	30·7	163	49·1	61	18·4	6	1·8	332
1958	91	25·6	187	52·7	72	20·3	5	1·4	355
1959	103	32·2	151	47·2	55	17·2	11	3·4	320
1960	89	30·1	144	48·6	49	16·6	14	4·7	296
1961	90	43·1	73	34·9	34	16·3	12	5·7	209
1962	†117	48·1	84	34·6	36	14·8	6	2·5	243

* Classified according to Diagnostic Standards N.T.A. † Includes 4 Primary.

Table 3

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR ENDED 31ST DECEMBER, 1962

Showing Age, Sex, Form and Stage of Disease

Age Group	Males					Females					Persons					Total
	Pulmonary			Non-Pulm.	Pleur. Effus.	Pulmonary			Non-Pulm.	Pleur. Effus.	Pulmonary			Non-Pulm.	Pleur. Effus.	
	Min.	Mod.	Adv.			Min.	Mod.	Adv.			Min.	Mod.	Adv.			
0– 4	1*	....	....	1	....	3*	....	....	5	....	4*	....	....	6	....	10
5– 9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
10–14	....	....	....	....	....	1	....	....	1	....	1	....	....	1	....	2
15–19	....	2	2	1	....	1	....	1	....	....	1	2	3	1	....	7
20–24	2	1	....	1	1	2	....	....	....	....	4	1	....	1	1	7
25–29	2	5	....	1	....	2	2	1	....	....	4	7	1	1	....	13
30–34	6	2	....	....	1	9	3	2	....	....	15	5	2	....	1	23
35–39	5	4	3	....	....	2	4	....	....	....	7	8	3	....	....	18
40–44	6	4	1	3	....	7	....	....	1	....	13	4	1	4	....	22
45–49	4	5	1	1	....	2	3	1	1	....	6	8	2	2	....	18
50–54	14	9	4	1	....	2	....	2	1	....	16	9	6	2	....	33
55–59	16	10	5	....	1	4	1	1	....	....	20	11	6	....	1	38
60–64	9	7	3	2	....	....	1	1	1	....	9	8	4	3	....	24
65–69	3	5	3	1	3	....	2	....	1	....	3	7	3	2	3	18
70–74	7	3	....	....	....	....	1	1	....	....	7	4	1	....	....	12
75–	7	9	4	1	....	....	1	....	1	....	7	10	4	2	....	23
Total	82	66	26	13	6	35	18	10	12	....	117	84	36	25	6	268

* Primary.

Table 4

ANALYSIS OF REGISTER AS AT 31st DECEMBER, 1962

A. Pulmonary Tuberculosis
(excluding Pleural Effusions)

Activity	Number on Register according to original extent of lesions			Total
	Minimal	Moderate	Advanced	
Active	93	113	47	253
Quiescent—				
0–1 year	1	1	1	3
1–2 years	1	3	1	5
2–3 years	....	1	1	2
3–4 years	....	3	1	4
4–5 years	....	1	....	1
Inactive—				
0–1 year	76	47	23	146
1–2 years	86	66	24	176
2–3 years	83	121	14	218
3–4 years	103	124	25	252
4–5 years	62	126	33	221
5+ years	9	16	6	31
Total	514	622	176	1,312

B.	Pleural Effusions	21
C.	Non-Pulmonary Tuberculosis	91
	Total (all forms)	1,424

Table 5

WESTERN AUSTRALIA: TUBERCULOSIS INCIDENCE BY COUNTRY OF BIRTH, 1958–1962: MALES

Country of Birth	Population at June 30, 1961: Thousands (Census)	Incidence per Thousand Persons					Total Notifications, 1958–1962
		1958	1959	1960	1961	1962	
United Kingdom and Republic of Ireland	44·4	1·53	0·89	1·00	0·92	0·93	236
Germany	2·7	....	....	0·74	0·74	0·37	5
Greece	2·3	3·33	1·36	0·45	0·87	0·87	15
Italy	14·9	1·18	1·00	1·51	1·01	0·91	81
Netherlands	6·2	0·71	0·17	0·17	0·16	0·64	11
Poland	2·8	1·72	2·76	1·79	2·50	0·33	26
Yugoslavia	3·6	2·72	2·94	2·85	1·39	1·08	38
Other European	5·7	1·90	0·17	0·86	1·40	1·05	31
Other birthplaces	8·1	1·45	1·04	2·02	0·86	1·09	51
Total non-Australian-born	90·7	1·48	0·95	1·19	0·97	0·89	494
Australian-born*	284·8	0·51	0·62	0·49	0·30	0·37	636

* Full-blood aborigines excluded.

Table 6

WESTERN AUSTRALIA: TUBERCULOSIS INCIDENCE BY COUNTRY OF BIRTH, 1958–1962: FEMALES

Country of Birth	Population at June 30, 1961: Thousands (Census)	Incidence per Thousand Persons					Total Notifications, 1958–1962
		1958	1959	1960	1961	1962	
United Kingdom and Republic of Ireland	38·9	0·57	0·47	0·41	0·23	0·29	76
Germany	2·9	0·71	0·36	....	0·34	....	4
Greece	1·8	0·62	0·59	....	0·55	0·52	4
Italy	10·3	0·48	0·55	0·31	0·68	0·27	22
Netherlands	5·0	....	0·22	0·21	....	0·39	4
Poland	1·9	1·00	2·63	0·53	0·53	0·56	10
Yugoslavia	2·3	0·50	0·95	0·45	....	1·67	8
Other European	4·0	0·51	1·25	1·50	0·75	0·73	19
Other birthplaces	6·6	0·82	0·16	0·31	0·45	0·29	13
Total non-Australian-born	73·7	0·56	0·55	0·42	0·34	0·36	160
Australian-born*	287·4	0·25	0·21	0·19	0·16	0·16	275

* Full-blood aborigines excluded.

Table 7

THIRD MASS COMPULSORY METROPOLITAN SURVEY, TO 31/12/62

———	Persons X-Rayed	Active Tuberculosis	Tuberculosis rate per 1,000 micro films	Carcinoma of Lung
Attended survey within the specified times	142,545	69	0·48	52
Attended later following electoral roll check	19,019	14	0·74	3
Total	161,564 (83%)	83	0·51 {(1954 rate = 1·4) (1957 rate = 0·7)}	55

Table 8

THIRD MASS COMPULSORY METROPOLITAN SURVEY, TO 31/12/62
ACTIVE TUBERCULOSIS—NOTIFICATIONS

Age Group	Attended Survey within the Specified times	Attended later following electoral roll check
15–19	1	....
20–24	3	....
25–29	1	3
30–34	4	2
35–39	2	....
40–44	6	2
45–49	9	1
50–54	9	1
55–59	14	1
60–64	4	....
65–69	6	....
70–74	3	1
75+	7	3
Total	69	14

Table 9

SHOWING RESULTS OF PERIODICAL EXAMINATION OF MINE WORKERS

Year	Total No. of Examinations	Silicosis Cases Examined	New Cases of Silicosis	Asbestosis Cases Examined	New Cases of Asbestosis	New Cases of Pulmonary Tuberculosis
1950	6,203	349	14	....	....	12
1951	5,721	305	13	....	....	12
1952	5,959	294	9	....	....	12
1953	5,312	356	80	....	....	3
1954	6,179	487	158	....	....	16
1955	5,506	497	70	....	....	5
1956	5,476	474	30	....	....	9
1957	4,811	483	34	....	....	10
1958	6,286	582	54	....	....	8
1959	7,269	569	71	....	....	10
1960	7,385	530	50	....	....	12
1961	7,882	551	57	11	4	7
1962	7,572	566	50	6	2	3

Table 10

SHOWING RESULTS OF TUBERCULIN SURVEY OF SCHOOLCHILDREN

Heaf Gun Tests—			
Total number tested			8,644
Total number read			8,471
Less number previously vaccinated			163
Number Analysed			8,308
Of Whom—			
Number negative reactors (Heaf Gun)			7,431
Number positive reactors (Heaf Gun) Grade I		692	
Number positive reactors (Heaf Gun) Grade II		149	
Number positive reactors (Heaf Gun) Grade III		33	
Number positive reactors (Heaf Gun) Grade IV		3	
Total number positive reactors (Heaf Gun)			877
X-Rays—			
Number positive reactors X-Rayed			868
Number normal		868	
Number abnormal		*Nil*	

Details of Reactions

Age (yrs.)	No. Tested	No. Negative	Positive Reactors					
			Grade I	Grade II	Grade III	Grade IV	Total	Per cent.
3	....	....	....	....	....	....	....	....
4	....	....	....	....	....	....	....	....
5	80	80	....	....	....	....	....	0
6	112	107	3	1	1	....	5	4·5
7	124	123	1	....	....	....	1	0·8
8	170	167	2	1	....	....	3	1·8
9	257	246	9	2	....	....	11	4·3
10	306	295	10	1	....	....	11	3·7
11	417	384	29	3	1	....	33	7·9
12	1,365	1,255	84	21	5	....	110	8·1
13	1,980	1,798	141	35	5	1	182	9·2
14	1,610	1,412	151	42	4	1	198	12·3
15	1,149	973	147	26	3	....	176	15·3
16	503	423	64	8	8	....	80	16·0
17 and over....	235	168	51	9	6	1	67	2·9
Total	8,308	7,431	692	149	33	3	877	10·5

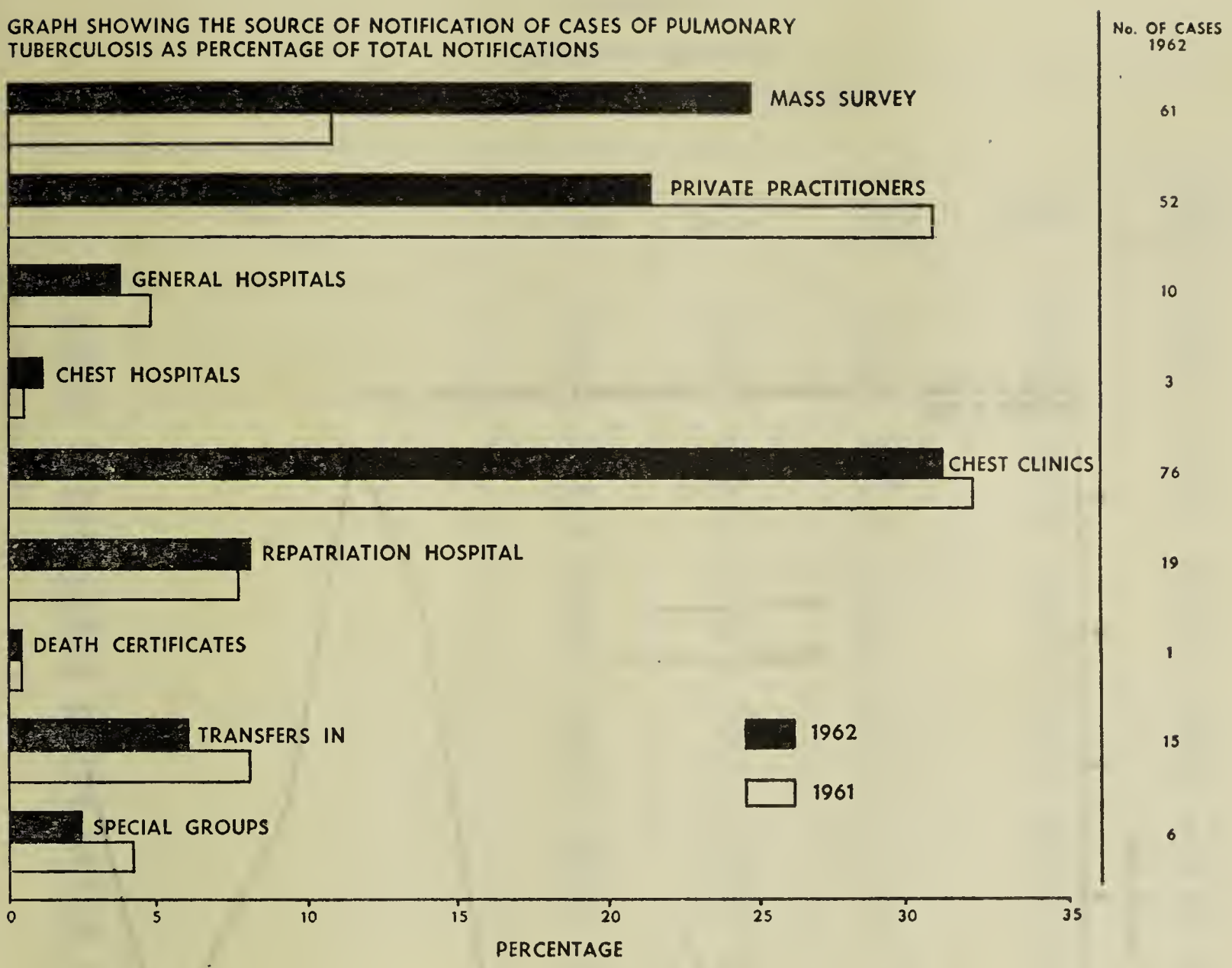
Table 11

SHOWING PATIENTS FROM WHOM ATYPICAL (ANONYMOUS) MYCOBACTERIA WERE ISOLATED IN 1962

Runyon Group	Casual Isolations	Intermittent Isolations	Persistent Isolations		Total
			True Atypical infection	Other	
I	....	1	....	....	1
II	4	....	3	....	7
III	44	6	11	1	62
IV	9*	....	....	....	9
Mixed II and III	....	....	1	....	1
Mixed III and IV	1	....	....	....	1
Total Patients	58	7	15	1	81

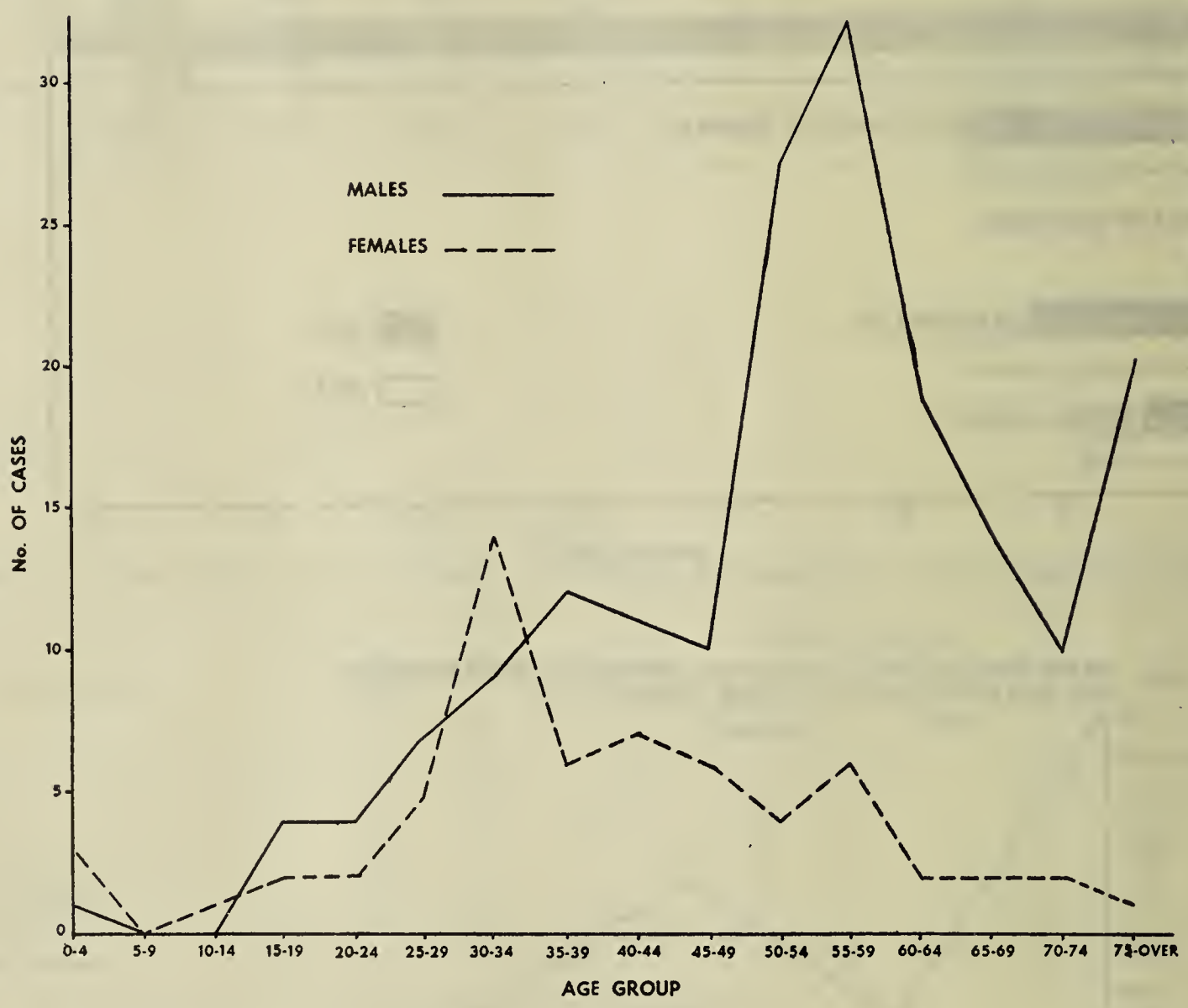
* Includes M. fortuitum—3.

GRAPH SHOWING THE SOURCE OF NOTIFICATION OF CASES OF PULMONARY TUBERCULOSIS AS PERCENTAGE OF TOTAL NOTIFICATIONS



GRAPH SHOWING ANNUAL TUBERCULOSIS INCIDENCE IN AUSTRALIAN-BORN AND NON-AUSTRALIAN BORN PERSONS 1958-1962

GRAPH SHOWING AGE DISTRIBUTION OF PULMONARY TUBERCULOSIS CASES NOTIFIED IN 1962



Appendix IV

Western Australia

PULMONARY TUBERCULOSIS

Year	Population in 1,000s	Notifications Received	Incidence Rate per 100,000 Population	Deaths Registered	Mortality Rate per 100,000 Population
1911	287	259	90·2	190	66·2
1912	301	429	142·5	220	73·1
1913	313	424	135·5	206	65·8
1914	323	353	109·3	229	70·9
1915	321	336	104·7	233	72·6
1916	313	511	163·5	225	71·9
1917	306	464	151·6	217	70·9
1918	308	432	140·5	245	79·5
1919	320	467	145·9	289	91·6
1920	330	442	133·9	259	78·4
1921	334	424	126·9	277	82·9
1922	341	387	113·8	256	75·1
1923	351	361	102·8	216	61·5
1924	363	381	104·6	228	62·8
1925	373	403	108·4	259	69·4
1926	381	415	108·2	252	66·1
1927	392	409	104·3	231	56·4
1928	408	395	96·8	282	69·1
1929	421	400	95·0	245	53·4
1930	429	569	132·6	218	50·8
1931	432	372	86·1	223	51·6
1932	435	339	77·9	203	46·7
1933	439	295	67·2	207	47·2
1934	442	287	64·9	218	49·3
1935	447	270	60·4	210	47·0
1936	452	338	74·8	193	42·7
1937	457	239	53·0	172	37·6
1938	464	247	53·2	177	38·1
1939	470	202	43·0	179	38·1
1940	473	231	48·8	181	38·3
1941	474	154	32·5	185	39·0
1942	477	113	23·7	175	36·7
1943	477	273	57·3	144	30·2
1944	481	219	45·4	134	27·9
1945	488	271	55·5	149	30·5
1946	493	343	69·6	163	33·1
1947	502	372	74·0	128	25·4
1948	515	325	63·1	157	30·5
1949	533	499	93·6	123	23·1
1950	558	586	104·8	129	23·1

DEATH CLASSIFICATIONS ACCORDING TO 6TH (1948) INTERNATIONAL LIST.

1950	558	586	104·8	125	22·4
1951	580	467	80·4	76	13·1
1952	601	508	84·5	75	12·5
1953	621	378	60·6	43	6·9
1954	640	348	54·3	57	8·9
1955	659	413	62·7	31	4·7
1956	677	424	62·6	43	6·3
1957	692	332	47·9	36	5·2
1958	706	355	50·3	22	3·1
1959	726	320	44·1	24	3·3
1960	731	296	40·5	29	4·0
1961	737	209	28·4	18	2·4
1962	755	243	32·2	24	3·2

Appendix V

Report of the Physician, Pulmonary Function Laboratory

ROUTINE INVESTIGATIONS

The total volume of work successfully completed during the year 1962 was larger than in any preceding year, both as to investigations completed and the number of patients attending the laboratory. Figures 1 and 2 give a picture of the volume of work year by year since the inception of the laboratory. The more complex investigations shown in Figure 2 are for the present year almost at the same level as during the preceding year ; this despite the fact that I was away from the laboratory more than three months owing to illness, leaving my assistant, Mrs. B. Tweed, alone to cope with the whole of the work during that period. The numbers of spirometric investigations can be taken as a close approximation to the numbers of patients attending, as, with the rarest of exceptions, all patients are tested on the spirometer, and, although there is a proportion of patients who are retested within 12 months, it is less than 10 per cent. of the total.

The following is a list of all investigations undertaken during the year :—

Spirometer tests	506
Oxygen Uptake (Gas Exchange)	58
Mixed Venous Blood CO_2 Tension	15
Arterial Blood CO_2 Tension	31
Heart Catheterization	2
Bronchospirometry	1

OBSTRUCTIVE DISEASE OF THE LUNGS

Of the 506 spirometer tests, 125, or 24·7 per cent., resulted in a forced expiratory volume of 40 per cent. or less of the predicted value. This represents a severe disability. If the figure 125 is reduced by 25 to arbitrarily allow for patients who may have been tested more than once during the 12 months, and also for outpatients, it would then appear that 100 inpatients were discovered to have a severe obstructive disability. This is 5·4 per cent. of total admissions during the year, medical and surgical of all categories, to the Sir Charles Gairdner Hospital. This figure is even more significant when it is realised that only 27 per cent. of patients admitted were referred to the laboratory for testing, and it suggests that the incidence of severe obstructive disease in this community may be of a high order. Figure 3 shows the age incidence of those with 40 per cent. or less of predicted forced expiratory volume. It will be seen that patients in their fifties and sixties account for more than 76 per cent. of the group as a whole, but that more than 14 per cent. are aged between 10 and 49 years.

ARTIFICIAL RESUSCITATION

Three patients received artificial resuscitation, two of them successfully. All three were clinically moribund initially. As experience accumulates in the use of automatic positive pressure ventilation for this purpose, there should be an increased efficiency both as to assessment and management of each individual case.

RECORDS

After nearly four years operation, we now find that a significant number of patients referred have attended in previous years. Comparison of present and past records is of great assistance in providing an objective clinical estimate.

RESEARCH INVESTIGATIONS

Early in the year Commonwealth Industrial Gases invited this laboratory to undertake an investigation designed to assess the therapeutic efficiency of the Bird positive pressure respirator in the treatment of obstructive disease of the lungs. For this purpose patients were paired on the basis of age and sex, one member of each pair receiving positive pressure treatment in addition to the standard treatment regime given to all patients in the trial. This investigation should be completed about the middle of 1963.

Our original investigation of gas exchange with the help of Mr. Hurley, of the Department of Mathematics, University of W.A., ultimately produced a second order differential equation :—

$$\frac{d^2P_E}{dx^2} + (a_1 + a_2 + a_3)\frac{dP_E}{dx} + a_1 a_2 P_E = a_1 a_2 P_A$$

in which P_A = alveolar oxygen partial pressure.
P_E = capillary blood oxygen partial pressure.
x = distance along capillary traversed by blood element.
a_1, a_2 and a_3 each represent an expression containing several parameters.

A simplified version of the solution of this equation takes the form of an exponential function which can be used to calculate the mean capillary oxygen partial pressure over the middle range of oxygen saturation.

I am indebted to Dr. Thiess of the Department of Physics of the University of Western Australia for his advice and help.

F. E. HEYMANSON,
Physician.

SPIROMETRIES

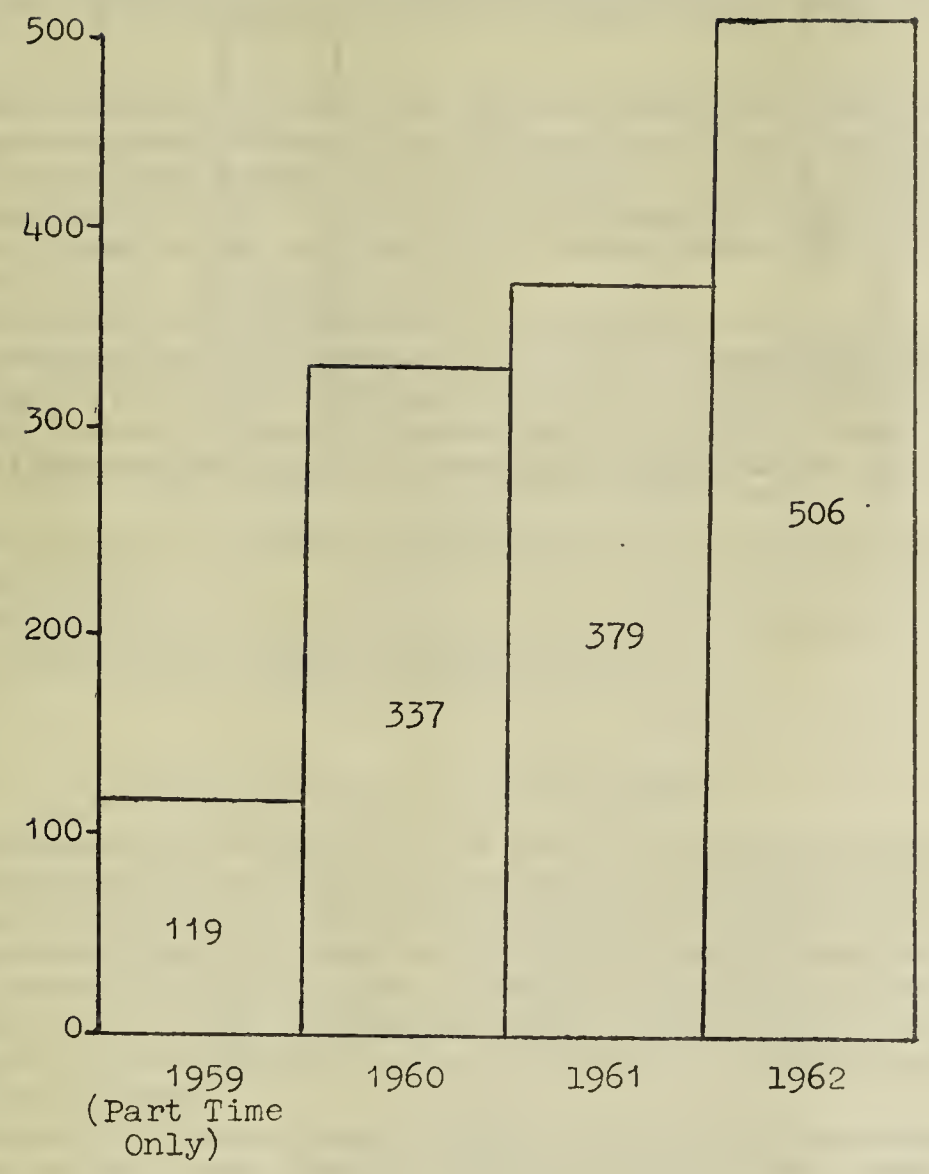


FIG. 1.

ALL TESTS EXCLUDING
SPIROMETRIES

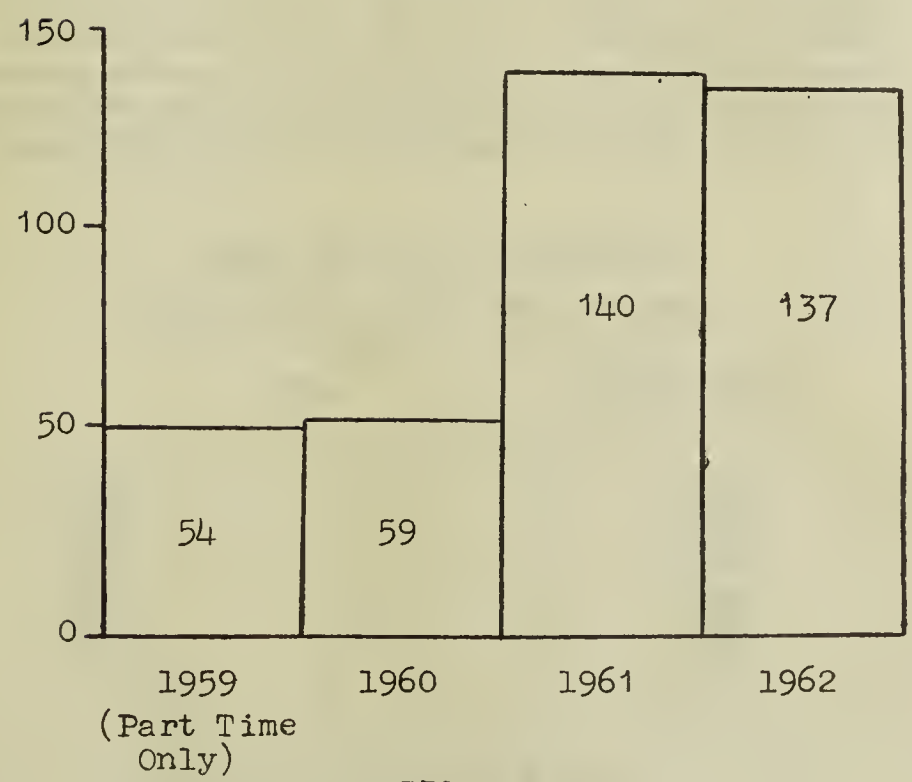


FIG. 2.

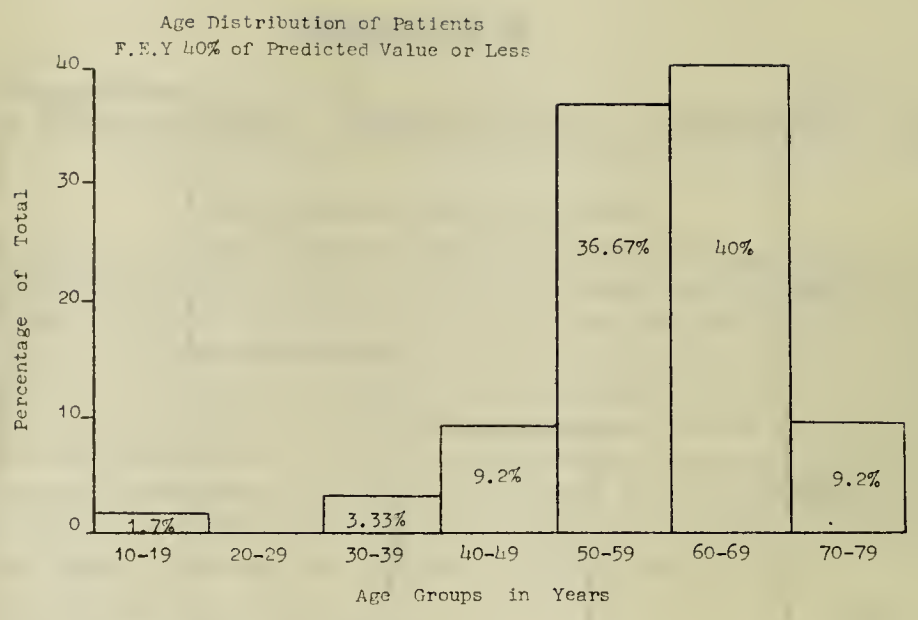

Age Distribution of Patients
F.E.V 40% of Predicted Value or Less
Percentage of Total
40
30
20
10
0
1.7%
3.33%
9.2%
36.67%
40%
9.2%
10-19
20-29
30-39
40-49
50-59
60-69
70-79
Age Groups in Years

FIG. 3.

Appendix VI

ANNUAL REPORT BY THE DIRECTOR OF EPIDEMIOLOGY AND SPECIAL SERVICES

Control of the major communicable diseases was maintained during 1962. The incidence of the more readily preventable diseases such as diphtheria, poliomyelitis, and typhoid fever, was sporadic and infrequent. On the other hand, the bowel infections such as bacillary dysentery, salmonellosis, infantile diarrhoea and infective hepatitis, remain endemic. It is doubtful whether diseases like these will ever be eliminated from communities such as ours, but the best prospect of curtailing them is by hand-hygiene and food-hygiene (both of which require continuous attention).

Outbreaks of muco-purulent conjunctivitis, which periodically involve some groups of country children each summer, were less conspicuous during 1962. A routine system of controlling these has been adopted, and antibiotic eye-ointment is supplied free of charge to the centres requiring them, together with relevant instructions. Trachoma, however, continues to present a frustrating problem. Despite re-organised efforts to reduce its prevalence amid the aboriginal component of the population, this disease remains a major commitment.

The increase in the incidence of venereal disease is disturbing, and the factors which could be associated with it will be discussed later.

Certain elective projects which were carried out during the year are being reported upon specifically, as are other significant matters which justify extended comment.

POLIOMYELITIS IMMUNISATION

The Poliomyelitis Immunisation Programme, which has been a major preoccupation during the last six-and-a-half years, was well maintained during 1962, and during the latter part of the year it was extended to include a fourth dose of Salk vaccine. Three doses have hitherto proved remarkably successful in controlling poliomyelitis within the State ; but during the 1961–1962 summer, outbreaks of poliomyelitis occurred in Queensland and New South Wales, and a number of children in those States acquired the disease despite three doses of the vaccine. The National Health and Medical Research Council, therefore, advocated a fourth dose of vaccine as an added safeguard ; and the Commonwealth accordingly arranged for increased allocations of vaccine to the States.

As a consequence of the fourth-dose campaign, a much greater number of vaccinations were carried out in 1962 than in the two preceding years. Nearly 180,000 separate doses of Salk vaccine were administered during the year ; bringing the total of inoculations performed during the last six years to over 1,600,000. The magnitude of this accomplishment is self-evident. A few years ago it would have seemed unattainable. The result of it is equally impressive. For, during the last six-and-a-half years only twenty West Australians have contracted poliomyelitis, and sixteen of these were unvaccinated persons. Two of the remaining four had received less than three injections ; while a third was already incubating the disease at the time of his third injection. In other words there has been only one failure out of over 450,000 triply-vaccinated persons. No comparable community anywhere in the world could have enjoyed better protection ; and there could be no better justification for the confidence which the public has placed in the vaccine.

During the year the outbreaks of poliomyelitis in the Eastern States focussed attention on the status of live (attentuated) or Sabin vaccine as an alternative to Killed or Salk vaccine. This matter was carefully considered at national level. It was decided, however, that Salk vaccine should remain the basis of State Immunisation Programmes, with an added fourth dose ; while the emergency use of Sabin vaccine would be examined in the event of any further outbreaks. Despite certain apparent advantages of Sabin vaccine, the record of Australian Salk vaccine has been so remarkable, particularly in this State, that a change to another agent (the efficacy of which could be far more difficult to assess) would require special justification. In any event, the policy in Western Australia would be influenced by the recommendations of The National Health and Medical Research Council, and by the opinion of the State Health Council.

ANNUAL SALK VACCINATIONS

(Since 1/7/56 when Salk Vaccination began)

Year	No. of Separate Injections Given
1956	224,466
1957	415,166
1958	273,017
1959	309,914
1960	140,590
1961	59,964*
1962	177,989
Total	1,601,106

* Includes 10,134 doses of Quadruple Vaccine (with a Salk Vaccine component).

SALK VACCINATION STATUS: W.A.
(Ages at time of Vaccination adjusted to 31/12/62)

Age Group	Estimated Population	Four Injections	Three Injections	Proportion having received at least Three Injections
				%
0–4	83,200	7,158	68,715	91
5–9	82,100	26,742	43,099	85
10–14	77,400	28,953	36,097	84
Under 15	242,700	62,853	147,911	87
15–19	63,400	12,991	37,792	80
20 and over	448,300	32,411	160,852	43
Over 15	511,700	45,402	198,644	48
All Ages	754,400	108,255	346,555	60

POLIOMYELITIS INCIDENCE
(Since Salk Vaccination began on 1/7/56)

Year	Not Vaccinated		Vaccinated		Total
	Non-Paralytic	Paralytic	Non-Paralytic	Paralytic	
1956	1	1	....	....	2
1957	....	3	....	....	3
1958	....	1	....	....	1
1959	....	2	....	3	5
1960	....	3	....	....	3
1961	....	2	....	....	2
1962	....	3	....	1	4
Total	1	15	....	4	20

Case No.	Year	Sex	Age	Virus Type	Vaccination Status
1	1956	M.	24	....	Unvaccinated
2	1956	M.	28	....	Unvaccinated
3	1957	M.	7	....	Unvaccinated
4	1957	M.	10	....	Unvaccinated
5	1957	M.	23	....	Unvaccinated
6	1958	M.	40	....	Unvaccinated
7	1959	M.	2	III	3 doses (onset 3 days after third dose)
8	1959	M.	3/12	....	Unvaccinated
9	1959	M.	2	....	2 doses
10	1959	F.	3	....	1 dose
11	1959	M.	7	III	Unvaccinated
12	1960	M.	7/12	....	Unvaccinated
13	1960	M.	3	I	Unvaccinated
14	1960	M.	1½	I	Unvaccinated
15	1961	F.	2	I	Unvaccinated
16	1961	M.	3	III	Unvaccinated
17	1962	F.	41	I	Unvaccinated
18	1962	F.	3	III	3 doses (onset 2 years after third dose)
19	1962	F.	28	III	Unvaccinated
20	1962	M.	37	III	Unvaccinated

TRACHOMA

The following comments are based on material provided by Dr. R. Allen, who continued his supervision of the Trachoma Control Programme during the year, in consultation with the part-time eye specialists associated with the Department. The basis of activities, as in the previous year, was systematic detection and treatment within the aboriginal and part-aboriginal sections of the community. Camps, missions, and other native aggregations throughout the southern half of the State were visited at regular intervals; and all those found to have trachoma in an active stage were treated with a five-day course of a long-acting sulfonamide (sulpha-methoxy-pyridazine). Altogether over 5,000 coloured persons were examined during the year and about 57 per cent. of them required treatment. As in the previous year the disease appeared to be restricted mainly to pre-school children and the younger school children. While the present regime of treatment is known to cure a proportion of cases, and minimise the chance of complications in others, it is apparent that the overall prevalence of the disease has not been curtailed. There are indications that this

high prevalence is largely attributable to repeated re-infections, sustained by poor living conditions and other environmental factors. Nevertheless, while the long-term solution to the trachoma problem is an elevation in the standard of living of native groups, further efforts towards short-term amelioration are warranted. Encouraging reports following intermittent instillation of anti-biotic oil suspensions have been published abroad. It is, therefore, proposed to supplement previous methods by this measure during the forthcoming year.

VENEREAL DISEASE

Four venereal diseases are notifiable in this State—gonorrhoea, syphilis , chancroid (or soft sore), and granuloma inguinale. The two latter are now exceptionally rare and have not been recorded for the last three years.

Syphilis is now much less common than was formerly the case, presumably because of the beneficial effect of quick-acting remedies such as penicillin, but 16 instances of it were notified during the year. The outstanding venereal problem, however, is gonorrhoea, and the fact that notifications of it have almost trebled in recent years, must cause serious concern. The reasons for this increase, which has also been observed in other parts of the world, are not easy to identify. Some of the increase, in Perth at any rate, may be attributed to more complete notification. Special efforts were made during the year to maintain the co-operation of medical practitioners, and to ensure that suspected sources of infection are treated as quickly as possible. The increase has involved both males and females, but has been most outstanding in males between the ages of 16 and 24. It has been suggested by some that the dispersal of the brothel area some five years ago, may have contributed to this increase. While it is true that the reported prevalence of venereal disease diminished during the two years following the abolition of the recognised brothel area, and that it increased thereafter, the dispersal of brothels may not be the main reason for the increase. Compact areas such as are recognised in certain other countries are admittedly easier to supervise and control than are dispersed establishments, but other factors may well be relevant. In any event, it is clear that more intensive education of young people must be undertaken.

Subsidized public clinics continue to operate regularly at both the Royal Perth and Fremantle Hospitals, and satisfactory arrangements for treatment of indigents in the country were maintained ; while by agreement with the Commonwealth Authorities, special facilities for the treatment of seamen at the various ports were maintained. No efforts were spared in tracing contacts who could be sources of infection, and in arranging for persons who have defaulted, to resume treatment.

Some fears have been expressed that the infective agent responsible for gonorrhoea has been acquiring resistance to penicillin in some of the larger cities of the world during the last two or three years. A special effort, therefore has been made to investigate the possibility of similar resistance becoming evident here ; but fortunately all species of the gonococcus available for testing hitherto have been sensitive to penicillin and other antibiotics.

Control measures will continue to be based on the prompt investigation of reported sources of infection, the provision of adequate facilities for treatment and the education of young persons ; but it is obvious that the role of a health organisation in controlling infections of this type can only be a partial one ; and that greater control will only be achieved by other influences, for which a health authority cannot be responsible.

VENEREAL DISEASE, W.A., 1953–1962

Year	Gonorrhoea	Syphilis (All Types)	Granuloma (Inguinale)	Chancroid	Venereal Disease (All Forms)
1953	189	43	2	1	235
1954	188	21	1	2	212
1955	188	14	1	....	203
1956	188	12	....	....	200
1957	213	14	1	....	228
1958	148	5	....	1	154
1959	72	9	....	1	81
1960	87	6	....	....	93
1961	119	17	....	....	136
1962	283	16	....	....	299
1953–1962	1,675	156	5	5	1,841

Years	Age Groups					
	15–19	20–24	25–29	30–34	35 and over	Age not stated
	%	%	%	%	%	%
1958	6	24	26	20	23	1
1959	7	25	15	19	32	2
1960	18	19	9	13	29	12
1961	10	30	17	18	22	3
1962	18	32	15	11	20	4
1958–1962	13	28	17	15	23	4

VENEREAL DISEASE IN WESTERN AUSTRALIA

	Male		Female		Total	
	1961	1962	1961	1962	1961	1962
Syphilis—						
Primary	5	4	1	2	6	6
Secondary	1	2	1	....	2	2
Tertiary	6	5	3	2	9	7
Congenital	....	....	....	1	....	1
Total Syphilis	12	11	5	5	17	16
Gonorrhoea	109	223	10	60	119	283
Granuloma	....	....	....	....	....	....
Chancroid	....	....	....	....	....	....
Grand Total	121	234	15	65	136	299

SWIMMING AND HEALTH

(Report on a Study of 5,000 Children attending Swimming Classes)

by Dr. D. Snow and Dr. R. Allen

1. BACKGROUND

A short course on instruction in swimming is provided each year by the Department of Education, for school children in Western Australia. The course consists of ten lessons, each of 45 minutes duration. One lesson is given on each working day of two consecutive weeks, during the summer vacation. The vast majority of participants are between the ages of 6 and 16 years, and are grouped into categories according to their swimming experience. Each category is divided into classes of about 20 children, and each class is supervised by a separate instructor. The locations used include chlorinated pools of the " Olympic " type, sheltered areas off ocean beaches, and selected river sites.

In January, 1962, approximately 34,000 children were enrolled for this course and the task of training them was assigned to some 38 instructors.

2. OBJECTIVES

The main intentions at the outset of this study were :—

(1) To determine the relative amount of absenteeism at differing, but representative swimming-class sites.

(2) To find out, if possible, how much of this absenteeism was due to ill-health and the types of illness involved.

(3) To test the bacteriological quality of the water at the various sites, at selected times, and to examine the results in relation to the absenteeism and illness encountered.

3. METHOD

Locations Selected

Five locations were selected :—

(1) A chlorinated swimming pool.

(2) An ocean site, partly sheltered by rock formations.

(3) A site in the upper reaches of the Swan River (at Bassendean).

(4) A site about halfway down the Swan River (at Como).

(5) A site in the lower portion of the Swan River (at Claremont).

Recording Procedure

With the collaboration of the instructors at these locations, the attendance of pupils was recorded each day on a card specially designed for the purpose, and enquiries were made as to the reasons for any absences. In addition, any obvious ailments observed by the instructors were noted and any complaints involving a deviation from normal health were also recorded.

Bacteriological Investigations

Water samples were taken for bacteriological analysis from each of the five locations every morning at 8.30 a.m. prior to the commencement of the classes, and throughout the ten days involved in the course. In addition, on five consecutive days, further samples were obtained from three of the sites (the chlorinated swimming pool and two of the river sites, i.e. Bassendean and Como). These were taken at 10.30 a.m. (midway through the swimming period) and at 12.30 p.m. (at the conclusion of activities).

4. FINDINGS

Absenteeism

The absences recorded are indicated in Tables I and II. It will be seen that 2,445 (48·1 per cent.) of the 5,079 children observed in this study were absent on one or more occasions ; but that, of the total number of 50,790 separate swimming sessions involved, only 8,356 (16·4 per cent.) were missed. The average number of swimming sessions missed by each absentee was 3·4. Absenteeism was highest for the river sites, both in terms of the proportion of children absent and the number of swimming sessions ; and lowest in the chlorinated pool with the ocean site occupying an intermediate position. In fact, about twice as many absences were recorded in the river groups as opposed to the chlorinated swimming pool.

So far as the three individual river sites were concerned, there was a higher rate of absenteeism at the up-stream site (Bassendean) than at either of the other two, i.e. 67·8 per cent. of children were absent on one or more occasions and 24·7 per cent. of swimming sessions were missed as opposed to approximately 50 per cent. and 17 per cent. respectively at the other two sites.

Absenteeism due to known illness is set out in Tables III and IV, and it will be seen that when these are expressed in terms of an absence rate per thousand swimming sessions, river sites (with 24·4 per cent. absences per 1,000 sessions) substantially exceed the rate recorded either in the chlorinated swimming pool or in the ocean (15·3 and 15·8 respectively). In the river there was a higher rate of absenteeism at Como (31·8) than at either Bassendean (19·7) or at Claremont (20·8).

Bacteriological Results

The results of bacteriological examination of the water samples taken are tabulated in Tables V and VI. None of the 20 samples retrieved from the chlorinated swimming pool revealed coliform organisms. Of the 10 samples taken from the ocean, three failed to reveal any coliform bacteria, and the average coliform count recorded was 8·7 per 100 ml. The 50 samples taken from the river sites revealed an average of 262 coliform organisms per 100 ml. ; and the density of these bacteria was much higher at the up-stream site at Bassendean (549·5) than at either of the other two sites—Como (34·6) and Claremont (142·2).

Table VII sets out the findings in respect of the three sites where serial samples were taken on each of five consecutive days (prior to the commencement of classes, during their progress, and at their termination). It will be seen that the average count of coliform bacteria (as also that of the faecal types) at the conclusion of the classes was not very much higher than at their commencement. The mid-session samples, however, (10.30 a.m.) showed the highest average count of " faecal coli ".

Nature of Illnesses

An indication of the nature of the illnesses associated with absenteeism is contained in Tables VIII and IX. It will be seen that the upper respiratory group of disorders accounted for over half of all the illnesses either responsible for absenteeism reported to or observed by the instructors. The common cold was the most frequent ailment encountered (36 per cent. of all illnesses), with ear complaints next ; while abdominal or intestinal disorders accounted for 8·7 per cent. of absences (Table X).

5. COMMENTARY

Although all the objectives of this investigation were not achieved, it has produced information which is of some interest. The differing rates of absenteeism at the various sites, the nature of the illnesses recorded, and the bacteriological findings are all relevant to matters which are referred to the Health Department from time to time. It was unfortunate that a comparable control group of non-swimmers could not be assembled. It was impracticable to secure definite reasons for absenteeism in more cases, and it was impossible to secure previous medical histories of the children involved. Within these limitations, this study has served a useful purpose. There are features of it which appear to support common impressions, not the least of which is that the environment of choice for organised groups of child-swimmers should be the chlorinated swimming pool.

6. SUMMARY

The incidence of absenteeism and illness in a group of 5,000 school children in different types of swimming environment was studied over a period of a fortnight. Absenteeism in terms of swimming sessions missed was lowest at a chlorinated pool (7·8 per cent.) and highest at river sites (19·9 per cent.). Upper respiratory tract disorders (among which the common cold was most frequent) were the main ailments encountered. The advantage of swimming in a chlorinated pool in preference to other venues is indicated.

7. ACKNOWLEDGMENT

This study would not have been possible without the co-operation of the Director of Physical Education (Mr. E. Halliday) and his staff including the many swimming instructors who were prepared to make time for specific inquiries, observations and the keeping of records. And the assistance of the Director and staff of the Public Health Laboratories, where the water samples were tested is gratefully acknowledged.

Table I
ABSENCES : ALL LOCATIONS

Location	Children	Children Absent on One or More Occasions	Number of Swimming Sessions Missed	Average Number of Sessions Missed by each Absentee
Clr Pool	733	213 (29·0%)	572 (7·8%)	2·7
Ocean	1,121	420 (37·5%)	1,371 (12·2%)	3·3
River	3,225	1,812 (56·2%)	6,413 (19·9%)	3·5
All Locations	5,079	2,445 (48·1%)	8,356 (16·4%)	3·4

Table II
ABSENCES : RIVER LOCATIONS

Location	Children	Children Absent on One or More Occasions	Number of Swimming Sessions Missed	Average Number of Sessions Missed by each Absentee
Bassendean	1,066	720 (67·8%)	2,630 (24·7%)	3·7
Como	1,151	577 (50·0%)	1,939 (16·8%)	3·4
Claremont	1,008	515 (51·0%)	1,844 (18·3%)	3·6
River	3,225	1,812 (56·2%)	6,413 (19·9%)	3·5

Table III
ABSENCES DUE TO KNOWN ILLNESS : ALL LOCATIONS

Location	Swimming Sessions	Sessions Missed because of Known Illness	Absence Rate per 1,000 Sessions
Clr Pool	7,330	112	15·3
Ocean	11,210	177	15·8
River	32,250	786	24·4
All Locations	50,790	1,075	21·2

Table IV
ABSENCES DUE TO KNOWN ILLNESS : RIVER LOCATIONS

Location	Swimming Sessions	Sessions Missed because of Known Illness	Absence Rate per 1,000 Sessions
Bassendean	10,660	210	19·7
Como	11,510	366	31·8
Claremont	10,080	210	20·8
All Locations	32,250	786	24·4

Table V
BACTERIAL CONTENT OF WATER SAMPLES

Location	Number of Samples Examined	Total Coliforms	Average Coliforms (per 100 ml.) pre Sample
Clr Pool	20	0	0
Ocean	10	87	8·7
River	50	13,106	262·1
	80	13,193	90·3

Table VI
BACTERIAL CONTENT OF WATER SAMPLES

Location	Number of Samples Examined	Total Coliforms	Average Coliforms (per 100 ml.) per Sample
Bassendean	20	10,991	549·5
Como	20	693	34·6
Claremont	10	1,422	142·2
	50	13,106	242·1

Table VII
BACTERIAL CONTENT OF WATER SAMPLES

Time	Average Count of "Presumptive Coliforms" per 100 ml.	Average Count of "Faecal Coli" per 100 ml.
8·30 a.m.	347	47
10·30 a.m.	317	90
12·30 p.m.	405	50

Table VIII
ABSENCE RATE PER 1,000 SWIMMING SESSIONS
(Because of Known Illness)

Location	Upper Respiratory Disorders	Sore Ears	Sore Eyes	Abdominal Upset	Other	All Illnesses
Clr Pool	4·7	1·6	0·3	1·7	7·0	15·3
Ocean	7·8	0·5	0·3	1·3	5·9	15·8
River	13·6	2·7	0·7	1·4	5·8	24·4
All Locations	11·2	2·1	0·5	1·5	6·1	21·2

Table IX
ABSENCE RATE PER 1,000 SWIMMING SESSIONS
(Because of Known Illness)

Location	Upper Respiratory Disorders	Sore Ears	Sore Eyes	Abdominal Upset	Other	All Illnesses
Bassendean	11·1	3·7	0·8	0·5	3·6	19·7
Como	17·3	3·4	0·4	2·7	8·0	31·8
Claremont	12·2	1·0	0·8	1·0	5·9	20·8
All Locations	13·6	2·7	0·7	1·4	5·8	24·4

Table X
ILLNESSES CAUSING ABSENCES

Illness	Children Involved	Swimming Sessions Missed	Average Number of Sessions Missed per Illness
Common Cold	209 (36·4%)	394	1·9
Sore Ears	68 (11·8%)	105	1·5
Influenza	40 (6·9%)	95	2·4
Sore Throat	40 (6·9%)	75	1·9
Abdominal Upset	50 (8·7%)	74	1·5
Sunburn	2 (4·4%)	48	1·9
Sore Eyes	13 (2·3%)	26	2·0
Miscellaneous	130 (22·6%)	258	2·0
Total	575 (100·0%)	1,075	1·9

SWIMMING AND EAR DISEASE

(A Report on 248 Patients Observed by 19 General Practitioners in Perth)

During the 12 month period September, 1961 to August, 1962, 19 members of the Australian College of General Practitioners recorded certain specific information about every patient referred to them because of ear disease. The general intention of the study was to assess the relationship between swimming and ear disease. The participating doctors represented nine metropolitan practices ; and the information collected, apart from clinical particulars, included swimming details such as frequency, duration, favourite sites, and interval between the last swim and development of ear symptoms. The findings are presented in the tabulations which are attached. The main features are the following :—

(1) The outstanding symptom of ear disease which caused over 80 per cent. of patients to seek medical attention was *earache*, and this was more often than not, the sole symptom.

(2) Approximately 60 per cent. of the patients involved were swimmers and most of these had been swimming twice a week, or more, prior to the onset of symptoms.

(3) Otitis media was the commonest clinical condition diagnosed. It accounted for more than half the patients in both groups (58 per cent. and 52 per cent.). Diffuse otitis externa was next in order of frequency (28 per cent. and 32 per cent.).

(4) Ear disease among non-swimmers occurred throughout the year, with relatively small fluctuations from month to month. On the other hand, nearly 70 per cent. of the ear disease among swimmers occurred during the very hot months of January and February ; while no cases were encountered during the cold months of May to August.

(5) Nearly 60 per cent. of all patients seen were children (under 15) ; and child patients were more conspicuous among swimmers than non-swimmers (70 per cent. as opposed to 40 per cent.).

1. PRESENTING SYMPTOMS

Presenting Symptom/s	Swimmers		Non-Swimmers	
	%		%	
Earache—				
Without other sign or symptom	61		71	
With discharge	17		12	
With deafness	7	88	....	85
With both discharge and deafness	3		2	
Deafness—				
Without other sign or symptom	3		2	
With discharge	2		2	
With earache	7	15	....	6
With both discharge and earache	3		2	
Discharge—				
Without other sign or symptom	7		11	
With earache	17		12	
With deafness	2	29	2	27
With both earache and deafness	3		2	

2. PRECEDING ILLNESSES

Preceding Illness	Swimmers		Non-Swimmers	
	%		%	
Common Cold	35		40	
Sore Throat	6		3	
Influenza	7	49	3	54
Other Ailments	1		8	
No Preceding Illness	51		46	

3. CLINICAL DIAGNOSIS

Clinical Diagnosis	Swimmers		Non-Swimmers	
	%		%	
Otitis Externa—				
Diffuse	28		32	
Furuncle	6	39	6	42
Unspecified	5		4	
Otitis Media	58		52	
Earache (unspecified)	3		6	

4. INTERVAL BETWEEN ONSET AND MEDICAL CONSULTATION

	Swimmers	Non-Swimmers
	%	%
1 day	39 }	35 }
2 days	16 } 55	22 } 57
3 days	12	6
4 days	6	3
5 days	4	3
6 days	0·5	....
7 days	10	10
7–13 days	2	....
14 days or more	10	21
Not stated	0·5	....

5. (A). TIME OF YEAR

	Swimmers	Non-Swimmers
September	4 (2·7%)	11 (11%)
October	5 (3·4%)	17 (17%)
November	14 (9·6%)	9 (9%)
December	17 (11·5%)	11 (11%)
January	66 (44·6%)	6 (6%)
February	33 (22·3%)	4 (4%)
March	8 (5·4%)	7 (7%)
April	1 (0·5%)	6 (6%)
May	....	7 (7%)
June	....	9 (9%)
July	....	8 (8%)
August	....	5 (5%)
Total	148 (100·0)	100 (100·0%)

5 (B). AVERAGE HOT DAYS IN EACH MONTH (PERTH)

Average Number of Days on which Temperature exceeds 90 Degrees F.

September	....	
October	0·3	(0·9%)
November	2·2	(6·9%)
December	5·6	(17·6%)
January	8·8	(27·7%)
February	8·2	(25·8%)
March	5·5	(17·3%)
April	1·2	(3·8%)
May	....	
June	....	
July	....	
August	....	
Year	31·8	(100·0%)

6. AGE GROUPS INVOLVED

Age Goups	Swimmers	Non-Swimmers	Total
0–4	10 (6·7%)	17 (17%)	27 (10·9%)
5–9	38 (25·7%)	18 (18%)	56 (22·6%)
10–14	59 (39·9%)	7 (7%)	66 (26·6%)
15–19	20 (13·5%)	8 (8%)	28 (11·3%)
20 and over	21 (14·2%)	50 (50%)	71 (28·6%)
All Ages	148 (100·0%)	100 (100·0%)	248 (100·0%)

7 (A). FREQUENCY OF SWIMMING

	%
Twice a week, or more	71
Once a week	12
Once a fortnight	3
Once a month	1
Only occasionally	13

7 (B). AVERAGE TIME SPENT IN WATER

	%
Less than half an hour	15
Half to one hour	42
One to two hours	28
Two hours or more	15

8. SWIMMING SITES RECORDED

River Sites—		%
Claremont	19	
Como	16	
Crawley	7	50
Mosman	2	
Others	6	
Ocean Sites—		
Cottesloe	17	
Rockingham	12	
Scarborough	2	44
Leighton	2	
Others	11	
Swimming Pools		6

Appendix VII

DENTAL CARIES AND DRINKING WATER

(Preliminary Report of a Study on Children at CUE and MEEKATHARRA in W.A.; May-June, 1963)

By D. G. KAILIS and D. G. SILVA, (Faculty of Dentistry, University of W.A.)

AIM OF INVESTIGATIONS

To compare the caries life experience of pre-school and school age children in Cue and Meekatharra.

CHOICE OF TOWNS

These two towns were chosen for the following reasons :—

(1) Cue has a naturally fluoridated bore water supply containing 1·25 p.p.m. F. This concentration of fluoride has been proved in many countries to be the optimal concentration of fluoride in water which, ingested from birth, decreases caries incidence between 50 per cent. and 60 per cent.

(2) Meekatharra was used as a control area, and its bore water supply contained 0·4 p.p.m. F. which is considered sub-optimal.

(3) Both towns are in the same geographic area, experiencing the same climatic conditions, socio-economic status and have similar industries.

PERSONNEL EXAMINED

1. A total of 90 children were examined for caries, 38 in Cue and 52 in Meekatharra. Their ages ranged from 1-15 years.

2. Only children who had been born and raised in Meekatharra and Cue were selected for the investigation.

3. Of these, only those children who had drunk the town's water supply from birth and who had not been given any F. tablets were chosen.

	Pre-School	School	Total
Cue	22	16	38
Meekatharra	12	40	52
Total	34	56	90

RECORDS OBTAINED

The following table shows the caries life experience (teeth that have been affected by decay from birth) in Cue and Meekatharra children per 100 teeth :—

	def	DMF
Pre-School age	4·14	....
Cue (1·25 p.p.m. F. 784 teeth examined)—		
School age	25·6	13·5
Pre-School age	12·5	....
Meekatharra (0·4 p.p.m. F. 1,181 teeth examined)—		
School age	49·2	30·76

Code :

Permanent dentition—

D — decayed.
M — missing due to extraction.
F — filled teeth.

Deciduous dentition—

d — decayed.
e — extracted early or requiring extraction prior to normal shedding or exfoliation.
f — filled teeth.

D M F and d e f are the final figures indicating life caries experience in permanent and deciduous dentitions respectively.

RESULTS OF INVESTIGATION

There was a marked difference in caries incidence between the children in Cue and Meekatharra, even though the available samples were small.

(1) *Total per cent. Teeth Affected by Caries*

Cue.—94 out of 784 teeth were affected by caries—approximately 12 per cent.
Meekatharra.—382 out of 1,181 teeth were affected by caries—approximately 32 per cent.

(2) *Proportion of Pre-School Children Affected by Caries*

Cue.—17 out of 22 pre-school children were completely free from caries.
Meekatharra.—6 out of 12 pre-school children were completely free from caries.

(3) *Proportion of School Children Affected by Caries*

Cue.—2 out of 16 children were free from caries.
Meekatharra.—No school children were free from caries.

(4) *Proportion of Decayed Tooth Surfaces*

Cue.—15 surfaces were affected per 100 teeth affected.
Meekatharra.—47 surfaces were affected per 100 teeth affected.

GENERAL CONCLUSIONS

1. The pre-school children in Meekatharra had three times the dental decay that the pre-school children in Cue had experienced.

2. The school age children in Meekatharra had twice the dental decay that the school children in Cue had experienced.

3. Using Meekatharra as a base line, which can be done as it has similar climatic, socio-economic and industrial conditions to Cue, the overall caries experience of the children examined shows a reduction in Cue of approximately 62 per cent.

4. This investigation has been rewarding and merits further work, especially in those towns in the area with less or no natural occurring fluoride in the water supplies.

ACKNOWLEDGMENT

This study was sponsored by the Department of Public Health, which assisted financially and in other ways. The authors particularly wish to thank the following for valuable aid :—

Professor K. J. G. Sutherland, Dean of the Faculty of Dental Science ;
Dr. N. Peverill, Superintendent of the Perth Dental Hospital ;
Matron Brady ;
Dr. D. Snow, Deputy Commissioner of Health ;
Mr. A. G. McKenna, Senior Dental Officer ; and
Dr. R. Allen of the Health Department.

Appendix VIII

DERBY LEPROSARIUM

WESTERN AUSTRALIA

Admissions and Discharges for the Year 1962, compiled from the Monthly Returns of the Superintendent

Month	Admissions							Discharges											Inmates Remaining in Leprosarium		
	Males			Females			Total Admitted	Males					Females					Total Discharged			
	Admitted	Re-Admitted	Total Males	Admitted	Re-Admitted	Total Females		Discharged Cured	Deceased	Absconded	Discharged Non-Infectious	Total Males Discharged	Discharged Cured	Deceased	Absconded	Discharged Non-Infectious	Total Females Discharged		Males	Females	Total Remaining
January	....	1	1	....	1	1	2	....	1	....	....	1	1	....	....	....	1	2	102	67	169
February	....	....	....	1	1	2	2	....	....	....	....	....	....	....	....	....	....	....	102	69	171
March	2	....	2	3	....	3	5	....	1	....	....	1	2	....	....	....	2	3	103	70	173
April	2	....	2	1	1	2	4	....	....	....	....	....	....	....	....	....	....	....	105	72	177
May	....	3	3	1	1	2	5	....	....	....	....	....	2	....	....	....	2	2	108	72	180
June	2	1	3	....	1	1	4	1	....	....	....	1	....	....	....	....	....	1	110	73	183
July	....	....	....	1	1	2	2	1	1	....	....	2	2	....	....	....	2	4	108	73	181
August	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	2	2	108	71	179
September	2	....	2	....	4	4	6	....	....	....	....	....	2	....	....	....	2	2	110	73	183
October	....	....	....	....	1	1	1	1	....	....	....	1	1	....	....	....	1	2	109	73	182
November	....	1	1	1	1	2	3	5	....	....	....	5	2	....	....	....	2	7	105	73	178
December	....	1	1	....	1	1	2	1	....	....	....	1	....	....	....	....	....	1	105	74	179
Total	8	7	15	8	13	21	36	9	3	....	....	12	13	1	....	....	14	16	....	....	....

Analysis of Admissions and Discharges During 1962

Inmates as at 31st December, 1961	169
Admissions for period ended 31st December, 1962	36
Discharged for period ended 31st December, 1962	22
Deaths for period ended 31st December, 1962	4
Absconded for period ended 31st December, 1962	—
Total Remaining at Leprosarium, 31st December, 1962	179

Appendix IX

REPORT FROM THE PUBLIC HEALTH AND MEDICAL DEPARTMENTS' LIBRARY

It is now possible to give fairly detailed statistics of the Library's work over the past four years. These tell a story of general steady growth over the period with a few sudden increases in certain areas.

Item	1959	1960	1961	1962
General—				
Non-journal publications received	658	575	778	999
Additional journals received	21	34	24	32
Total journals received	335	369	393	425
Average monthly journal routing	300	528	616	667
Borrowing (excludes routine journals)—				
From all other libraries	275	352	420	308
From W.A. Libraries	242	343	380	268
From Medical Library of W.A.	168	248	295	193
From Libraries outside W.A.	35	49	40	40
Lending (excludes routine journals)—				
All external loans	247	273	259	194
To Medical Library of W.A.	89	89	77	56
Number of organizations to whom loans were made	21	27	21	24
Photocopies supplies	....	1,135	1,238	1,368

For the first time the figures tend to indicate a reduced reliance on other libraries for material. This is especially noticeable with regard to borrowings from the Medical Library of W.A., as there was a drop of about one-third in 1962 as compared with 1961. This does not mean that the close co-operation of the State's two major medical libraries is in any way lessened. On the contrary, it is very heart-warming to be able to pay sincere tribute year after year to the unfailing courtesy and helpfulness of our colleagues across the road.

Co-operation with other libraries extends to the degree that this library regularly routes journals which are the property of these other libraries. There are 32 journals involved in this, 26 being routed by courtesy of the Medical Library, one by courtesy of the University of W.A. Library and one by courtesy of the Department of Agriculture Library. These are all journals routed to the Public Health Laboratories where they are seen by from one to four individuals. As a matter of interest, their titles are :—

Acta Cytologica.
American Heart Journal.
American Journal of Cardiology.
American Journal of Medical Sciences.
American Journal of Medicine.
Annales de l'Institut Pasteur.
Annals of Allergy.
Annals of Internal Medicine.
Annals of Physical Medicine.
Annals of Surgery.
Archiv fur Hygiene und Bakteriologie.
Archives of Dermatology.
Archives of Internal Medicine.
Archives of Pathology.
Australian Journal of Biological Sciences.
Australian Journal of Dermatology.
Australian Veterinary Journal.
British Heart Journal.
Cancer.
Circulation.
Circulation Research.
Excerpta Medica Section 10, Cardiovascular Diseases.
Experimental Cell Research.
Immunology.
Journal of Allergy.
Journal of Clinical Investigation.
Journal of Experimental Medicine.
Journal of Surgical Research.
Review of Allergy and Applied Immunology.
Revue d'Immunologie.
Scandinavian Journal of Clinical Laboratory Investigation and Supplement.

In return, this Library permits or arranges free circulation of its own journals to other libraries and organisations. A total of 77 of our journals are involved in this. The libraries and organisations involved (with the number of journals sent given in brackets) are as follows :—

Medical Library (20).
Health Education Council (11).
Government Chemical Laboratories (10).
Mental Health Services (9).
School of Occupational Therapy (6).
Department of Agriculture (4).
King Edward Memorial Hospital (4).
Royal Perth Hospital (3).
Perth City Council (2).
Registrar-General's Department (2).
Child Guidance Clinic (1).
Education Department (1).
University Department of Child Health (1).
Pre-Clinical Library (1).
Parents' and Citizens' Federation (1).

It is of interest to compare the titles and nature of the journals sent to the Medical Library by us with the list previously cited of those we borrowed from it. Our journals circulated by the Medical Library are :—

Abstracts of Japanese Medicine.
Acta Virologica.
American Journal of Tropical Medicine and Hygiene.
Archives of Physical Medicine and Rehabilitation.
British Book News.
British Journal of Photography.
British Journal of Preventive and Social Medicine.
Electronic Engineering.
Excerpta Medica, Section 15, Chest Diseases.
Excerpta Medica, Section 17, Public Health Social Medicine and Hygiene.
Excerpta Medica, Section 19, Rehabilitation.
Excerpta Medica, Section 20, Gerontology and Geriatrics.
Health Physics.
International Journal of Applied Radiation and Isotopes.
Journal of Atherosclerosis Research.
Journal of Pharmaceutical Sciences.
Journal of Psychosomatic Research.
Radiation Research.
Virology.
W.H.O. Library News.

There was a substantial increase this year in the amount of non-journal publications received. The total of 999 does not include such publications as annual reports, etc., of which 117 were received. A detailed dissection of where the 999 publications were lodged shows as follows :—

Main Library	558
Health Education Council	101
Public Health Laboratories (Main)	60
Chest Hospital (all libraries)	46
Nursing Training Schools	39
Government School of Nursing	36
Satellite Laboratories	36
State X-ray Laboratories	29
Infant Health Library	28
Child Guidance Clinic	24
North-West Medical Services and Hospitals	19
Chest Clinic	8
District Hospitals	7
Wooroloo Hospital	6
Osborne Park Hospital	1
Virology Laboratory	1

Again this year the Library benefited from the various library exchange and surplus disposal schemes that are in existence nationally and internationally. The Library received and gratefully acknowledged free material from the following sources :—

Wellcome Historical Medical Library.
National Library of Australia.
Commonwealth Department of Social Services Library.
Queensland Institute of Medical Research Library.

In addition, welcome donations of material were received from two other W.A. Libraries, the State Library and the Department of Agriculture Library.

JOHN F. WOOLCOTT, M.B., Ch.B.,
Chief, Technical Information Service and Library.

Appendix X

INFANT HEALTH SERVICE

I have the honour to submit to you a report on the work done by the Infant Health Service (which includes the Pre-School Service) in Centres, in Kindergartens and in co-operation with General Practitioners.

In 1962 an average of 78 per cent. of all babies born in the State attended Infant Health Centres. All birth notifications received from distant areas—North-West, Kimberleys, Murchison and Eastern Goldfields—were passed onto the Correspondence Section and the response to invitations to take part in the Correspondence Infant Health Scheme rose to 68 per cent., an increase of 10 per cent. since 1958. This satisfactory response is no doubt due in part to the increase in the number of school girls and boys who have taken the Correspondence Course in Mothercraft and Fathercraft in the areas which are in the Correspondence Scheme.

Centres in the State at the end of 1962

	Main Centres	Sub-Centres	Stopping Places
Metropolitan	41	104	....
Country	28	167	....
Caravans	4	....	83

New Buildings in 1962

Brunswick.
Thornlie.
Queen's Park.
Woodlands.
Dianella.
Alterations to Geraldton Quarters.

Under Construction in 1962

Kojonup (Quarters).
Beachlands.

Proposed New Buildings for 1963

Spencer's Park.
Esperance.
Karrinyup.
North Scarborough
Harvey (Quarters).
Riverton.
Mt. Hawthorn.
South Bentley.

There are 137 good Infant Health Buildings in the State, but many clinics are held in halls, chemists' shops, etc., which are frequently sub-standard.

Staff

Full-time Sisters—80.
Part-time Sisters—7.
Temporary Relievers—6.

Long Service Leave

Sisters H. Craig and D. Cameron had Long Service Leave during 1962.

Retired

Sisters Carroll and A. Hawkins retired during 1962. Sister Carroll retired after 32 years in the Infant Health Service.

Resigned

Sister Davey (ill-health).
Sister Dixon (marriage).
Sister Fry (marriage).
Sister Jackson (marriage)

Royal College of Nursing

Sister K. Hawkins gained a Scholarship to the College.

Ngal-a Trainees

Four Ngal-a trainees joined the staff in 1962. There are now 10 Ngal-a trainees in the Infant Health Service.

No Centre was closed during 1962 due to shortage of Staff. One or two Centres were closed for a few days at a time due to illness.

Survey of Work done in Infant Health Centres

Gross attendance at Centres	237,300
Individual attendance at Centres	31,266
Hospital visits	18,852
First home visits	10,036
Subsequent home visits	12,390
Ineffective visits	1,395
Advice by letter	351
Advice by telephone	8,921
Number of Urine tests	12,394
Number of Children and Toddlers referred under the Pre-School Health Scheme	2,416

Urine Testing at Centres

Phenistix Tests elicited 2 positives and in testing with Clinitest one positive was found. All these were later confirmed at Princess Margaret Hospital. Although this work is time-consuming because of the difficulty of obtaining specimens and the care which is necessary in reading re-actions, the results show that it is worthwhile.

Students at Centres

Medical Students, Trainee Nurses from Fremantle, Royal Perth and King Edward Memorial Hospitals, Dietitians and Infant Health Trainees continue to attend at Centres for observation and experience.

Report on Allawah Grove Clinic

A clinic was held each Wednesday morning at the same time as Dr. Lewis, Assistant to Professor of Child Health, holds his clinic.

Report :—

The gross attendance	131
Less than 12 months	75
More than 12 months	56
Less than 12 months individual	10
More than 12 months individual	10

Two of these were visiting babies.

The baby under 12 months (visiting) is still in hospital under treatment for recurrent diarrhoea.

Only sickness among babies and toddlers since February have been discharging ears and an occasional diarrhoea and only three babies less than 12 months and three more than 12 months have been admitted to hospital.

Since February, five babies have left Allawah Grove.

There are only three Expectant Mothers and three of the babies under 12 months are almost 12 months old.

Most of the babies and toddlers are fully immunised against Diphtheria, Whooping Cough, Tetanus, and Polio.

With the exception of two or three mothers, the babies and toddlers attend clinic regularly.

Correspondence Section

The volume of work in this Section will continue to increase. Six hundred and eighty-eight Children took Correspondence Classes in Mothercraft and Fathercraft. Many of the children who were pupils in the early classes are now married and are bringing their children to clinics in the towns which the Correspondence Sisters visit during their tours of the North-West, Kimberleys, Eastern Goldfields and the Murchison.

The Correspondence Sisters visit the schools during their tours and talk to the Mothercraft Pupils. Personal contact is extremely important. Many of these children visit Infant Health Headquarters when they come to annual camps at Point Peron and Rockingham.

The Medical Supervisor of Infant Health with Sister Philbin made a trip to the North-West and Kimberleys. Another visit was paid to the Warburtons, Dr. I. Lewis, a health inspector and two sisters comprising the team on this trip.

The following outback places were visited by Pre-School and Correspondence Sisters :—

Wandering Mission, Cranbrook, Gnowangerup, Marribank, Moora, Mogumber, New Norcia, Calingiri, Onslow, Roebourne, Wittenoom, Port Hedland, Camballin, Fitzroy Crossing, Christmas Creek, Wyndham, Kimberley Research Station, Kalumburu, Derby, Liveringa, Gogo, Hall's Creek, Kununurra, Forrest River, Warburton Ranges Mission, Pumping Stations, Yellowdine, Cundeelee, Kookynie, Laverton, Leonora, Mt. Ida, Wiluna, Stations near Sandstone, Payne's Find, Kurrawang, Menzies, Mt. Margaret, Cosmo Newbery, Gwalia, Albion Downs, Sandstone, Mt. Magnet, Nannine, Karalundi, Stations Meekatharra to Nullagine, Nullagine, Cue, Annean Station, Meekatharra, Marble Bar, Yalgoo.

During these visits to the outback the Sisters examined as many children and adults as possible for Trachoma.

The following is a survey of the work done by the Correspondence Section :—

SUMMARY OF WORK DONE BY CORRESPONDENCE SECTION

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Figures
Birth Notifications Received	169	163	138	116	586
New Babies	155	241	154	155	705
Requests for Advice *re* Babies	1,127	1,566	1,380	1,289	5,362
Individual Babies	408	720	567	474	1,205
Pre-School—					
Advice *re* Children	109	291	174	364	938
Advice Individual Children	82	283	161	320	826
Expectant Mothers—					
Advice *re*	44	124	124	73	365
Individual	26	77	68	42	113
Extra People Seen on Trips—Eyes, etc.	....	676	102	268	1,046
Weigh Centres—Attendances	701	775	880	808	3,164
Letters Received—					
Mothers	312	314	304	298	1,228
Others	195	230	189	163	777
School Children	595	3,046	2,463	2,529	8,633
School Children's Lessons	614	3,114	2,524	2,470	8,722
Letters Sent—					
Mothers	1,145	1,390	1,562	1,281	5,378
Others	402	372	359	353	1,486
School Children	506	1,641	1,443	1,446	5,036
School Children's Lessons	2,364	4,082	2,945	1,953	11,344
Visits to Homes (Country)	38	4	49	59	150
Visits to Hospitals (Country)	1	9	6	2	18
Visits to Centre—					
Country Visitors :					
Babies	88	47	44	42	221
Pre-School Children	38	12	11	11	72
Expectant Mothers	4	1	1	1	7
School Children	165	7	44	167	383
School Teachers	32	10	5	32	79
Others (in connection with Correspondence work)	61	78	58	39	236
Students	74	79	60	41	254
Groups shown over Centre (e.g., no Films or Lectures)	1	7	1	2	11
	Attend-ance	Attend-ance	Attend-ance	Attend-ance	Attend-ance
Lectures and Demonstration Films, etc.	25 (774)	8 (171)	11 (502)	15 (606)	59 (2,053)
Number of Pupils doing Mothercraft and Fathercraft	M. 212 F. 34	M. 399 F. 119	M. 341 F. 109	M. 319 F. 114	M. 547 F. 141 688
Mothercraft and Fathercraft Pupils Seen in Country Schools	109	256	61	54	480
Telephone Consultations—Country—Inward	14	18	30	27	89
Telephone Notifications *re* Country Babies	25	27	10	20	82
Country Trips made during the Year	....	....	....	....	7
Phenylketonuria Tests (Negative)	7	49	19	17	92

Mothercraft Section

This section of the work is still expanding. Over 3,000 girls took Mothercraft last year at schools and colleges in the Metropolitan Area and the country. Two hundred and seven individuals attended in the evening for parentcraft classes at West Perth and Fremantle. One hundred and sixty-two Expectant Mothers attended daytime classes. Fifty-two scripts were written for broadcasting from the Albany, Northam, Geraldton and Kalgoorlie Stations. Twenty Telecasts were prepared and given over Channel 7. Mothercraft Sisters relieved in five Infant Health Centres during school holidays. The Senior Mothercraft Lecturer continued to visit Carnarvon once a month. It is hoped that this will not be necessary for much

longer as when the second Infant Health Centre is built at Geraldton, one of the Sisters from Geraldton will undertake the work each fortnight. The following is a summary of the work done by the Mothercraft Section of Infant Health :—

SUMMARY OF MOTHERCRAFT LECTURES

	Number of Classes	Lectures	Examinations	Pupils
Metropolitan Schools—				
High Schools	73	532	1	1,582
Private	12	98	12	328
Perth Technical College	4	30	4	72
Trainee Teachers :				
Perth Technical College	2	14	2	16
Kindergarten Training College	1	7	1	18
Sub-Total	92	681	20	2,016
Special Classes—				
Home of Good Shepherd	3	37	....	37
Slow Learners	3	134	....	63
Home Science Leaving	2	5	....	11
Home Nursing (Belmont High School)	1	8	....	19
Bentley Infant Health Centre Mothercraft	1	7	....	10
Sub-Total	10	191	....	140
Clubs and Organizations—				
Girl Guides, Scarborough	1	9	1	8
Life Brigade, Manning	1	10	....	7
St. John's Cadets, Perth and Fremantle	2	22	2	37
Junior Red Cross, Perth	1	8	1	32
Sub-Total	5	49	4	84
Total, Metropolitan	107	921	24	2,240
Country Schools	46	345	14	824
Grand Total	153	1,266	38	3,064

Individual Group Lectures	Groups	Lectures	Individuals
Medical Students, Post-Graduate Nurses, Trainee Nurses	27	46	355

Expectant Parents Lectures	Lectures	Individuals
Evening Classes	63	207
Daytime Classes (Groups)	96	132
Daytime Classes (Individuals)	51	30
Total	210	369

Practical Examinations	Groups	Candidates
Ngal-a Mothercraft Nurses (State)	3	18
Scarborough Girl Guides	1	9
Junior Red Cross	1	32
St. John's Cadets, Perth and Fremantle	2	37
Total	7	96

Trans Train

Four trans trips were made in 1962 on each occasion by two Sisters from the Mothercraft Section. In February a Health Survey was made of 77 school children living on the Trans line. A total of 1,436 persons were seen during the year, of whom 438 were under five years of age. Three hundred and eighty-two doses of vaccine, Salk, Triple Antigen, Tetanus Toxoid and C.D.T. were given.

Pre-School Health Schemes

1. *Kindergartens*

The number of Kindergartens being opened is growing rapidly and Dr. Roberts and one Sister are finding it increasingly difficult to get all Kindergartens visited each year. An endeavour has been made to find practitioners to do part-time work and two women doctors have been at last found who have agreed to do part-time work next year in the Geraldton and Mt. Barker-Albany-Kojonup District. This would give Dr. Roberts time to visit Kindergartens in other country districts next year.

Summary of Work Done in Kindergartens.—During the year 1962 a total number of 3,759 children were examined at 134 centres. Each centre was visited once. There were 37 country centres and 97 metropolitan centres. These centres were controlled by different bodies.

Kindergarten Union	60
Independent Committee	38
Private	22
Institutions	5
Child Minding Centres	9

The attendance for the medical inspection in 1962 was remarkably high. There were very few absentees which contrasted with 1961 when in some cases the number absent was so great that a second visit was made at a later date. The only epidemic current in 1962 seemed to be chicken-pox.

The numbers of children referred were :—

Medical Attention	451
Home Attention	258
Dental Attention	985

Medical Attention.—Types of conditions referred :—

Upper respiratory	154	
Defective hearing	128	
Otitis Media	53	(some of these included above)
Tonsil enlargement	108	
Visual defect	64	
Squint	7	(included above)
Conjunctivitis	13	
Blepharitis	29	
Ptosis	1	
Stye	3	
Heart defect	10	
Chest conditions	20	
Speech defect	22	

Dental Attention.—The number referred was 985. This comprised 26 per cent. of the children examined. No estimate was made of the children taking Fluoride. The cases were those with dental caries in the molar teeth.

Home Attention.—These conditions were of a minor nature. Among these were :—

Ringworm	7
Impetigo	16
Pediculosis	12
Underweight	58
Not immunised	53

Kindergarten Union Kindergartens will in most cases have full quota of children in 1963. Some will have a waiting list. The average will be 50 plus. At some kindergartens it is proposed to stagger the attendance. This will make a second visit necessary. Three new kindergartens are opening at South Bentley, Alfred Cove, and Mt. Claremont.

Many of the Independent Committee and Private Kindergartens are in charge of untrained personnel and some only just reach the basic requirements.

The Institutions visited were St. Vincent's Foundling Home, Wanslea, Schoolar Methodist Home, Sister Kate's Home and Child Welfare Kindergarten, Mt. Lawley. The Brigidine Convent, Wembley, and the St. Thomas Convent, Bedford Park were also visited.

Pre-School Centres for Native Children.—There is an increasing number of pre-school centres opening for native children. These are usually conducted by one of the various groups. This year Allawah Grove and Mt. Mogumber Mission were visited, and in 1963, it is proposed to visit additional centres of this type at Moora, Pingelly, Merredin, Katanning and Pinjarra.

New Centres.—New Centres were visited at Mandurah, Beverley, York and Dumbleyung. During 1964 it is proposed to visit new country centres at Augusta, Bunbury, Corrigin, Cranbrook, Pinjarra, Narembeen, Waroona and Wyalkatchem. These were opened in 1962 but were not included in the itinerary.

Child Minding Centres.—These are of various types. There are approximately six conducted in private homes. Many of these are constantly opening and closing. They cater for about four or five children. If the conditions are good the small group in charge of one person approximates the home atmosphere. The larger centres cater for about 20–25 and assistance is employed. These are conducted in a play centre

atmosphere with adequate provision for a rest during the day. There is one establishment which is registered for 75 children. In my opinion there should be more trained staff employed and a better planning of the children's activity. Many of these children attend daily from 7.30 a.m. to 5 p.m., while their parents are working. The life at the centre is practically the only life they know.

It is with regret that I have to record the coming resignation of Sister D. Rogers. She has discharged her duties with conscientious care, skill and tact. I wish to express my gratitude for her loyal co-operation in our work.

2. *Pre-School Health Scheme in Co-operation with General Practitioners*

The Pre-School Sisters in co-operation with the Family Doctors resulted in 2,589 children being referred. The age groups referred were 6–8 weeks, one year and five years.

The number in	group one was	1,866
	group two was	641
	group three was	82

3. *Pre-School Health Scheme in Infant Health Centres*

Pre-School Sisters of whom there are now 26, saw 12,834 Pre-School Children at their Centres.

Eight of the Sisters who gained their Certificates in August, 1962, only held clinics from September until December.

Caravans

The four caravans still do good work in the outer Metropolitan districts and their visits are much appreciated by mothers living in these often isolated areas with very poor transport facilities. There have been a number of breakdowns especially with Caravans No. 2 and No. 4 which have disorganised the rosters and disappointed many mothers. Plans are afoot to replace these two caravans and it is hoped that by the middle of next year there will be two lighter vehicles on the road.

Pre-School Health Course

There was a Pre-School Health Course in 1962 when eight more Sisters gained the Certificate. There are now 26 Sisters who have completed the Pre-School Certificate.

Sister Brady who was on the Mothercraft Staff was transferred to Busselton in August to undertake Pre-School and lecturing work at Bunbury, Busselton, Margaret River, Cowaramup and Augusta. Sister also did the two locums at Busselton and Bunbury during the holiday season so that the Centres at Busselton and Bunbury would remain open for the convenience of mothers visiting at these resorts. This experiment has proved successful.

Teaching Method Course

Two groups of Sisters took courses in Health Education.

One group of Sisters did a short course in Marriage Guidance and Sex Education.

Annual Refresher Course

The Annual Refresher Course was held from 6th August, 1962, to 10th August, 1962. The inaugural meeting was chaired by Dr. Henzell and the proceedings were opened by the Hon. Ross Hutchinson, Minister for Health.

Infant Health Headquarters

Plans are afoot to provide new Headquarters so that the whole Headquarters Staff can be together again.

Visitors to Headquarters During 1962

Dr. V. Mary Crosse, Birmingham.
Dr. G. Sabapathy, Ceylon.
Dr. J. H. M. Barotholenveny, Ceylon.
Dr. K. K. W. de Silva, Ceylon.
Dr. Ruth Mocatta, Adelaide.
Dr. S. Vighnay, India.
Professor V. Collins, Melbourne.

Lotteries Commission

During 1962 the Infant Health Service again received generous support from the Lotteries Commission through help with buildings, renovations to Centres and donations of Baby Scales.

The Medical Supervisor of Infant Health was invited to meet the Commissioners to discuss Baby Scales as a result of which the Commissioners decided to buy a more accurate though more expensive type of scales.

In conclusion I wish again to record my sincere thanks to the Staff of the Infant Health and Pre-School Service for their excellent work during 1962.

ELIZABETH M. GIBSON,
Medical Supervisor of Infant Health.

(5)—78567

Appendix XI

SCHOOL MEDICAL REPORT

Many country schools are now up to date on a two year inspection schedule and all have been examined within three years.

A total number of 56,519 children were examined of whom 23,637 were in the country. The parents of 16,619 were notified of some defect or other, including dental defects, 4,838 were referred for medical attention. Table II shows a good response by the parents in obtaining this medical attention.

A total number of 80,065 children were examined for pediculosis (Table III) and the number notified as infected was 173. Re-visits to ensure that effective treatment had been carried out brought the total number of heads inspected up to 136,406.

Certain trends are noticed in the health of school children. It is noted that enlarged tonsils and nasal infections are becoming much more rare and very few of the enlarged tonsils seen are in need of medical attention. Need for surgical interference is most rare nowadays.

Acute ear infections are now more commonly treated with antibiotics and it is noted that the supply of ear drops is at last beginning to run out.

The private practitioner is beginning to take note of the common defects which are found by the School Medical Officers and such defects tend to be treated before the child comes to school. At any rate the number of conditions which we have to report for medical attention seems to be decreasing, therefore, perhaps we may take a little credit for having stimulated medical interest in such conditions before they are seen by the School Medical Officers.

Table I

School Medical Service

EXAMINATION OF METROPOLITAN AND COUNTRY SCHOOLS, 1962

—	Number Examined	Number Notified	Number Referred for Medical Attention	Number Referred for Home Attention and Observation	Number Requiring Dental Attention	Skin Complaints		Nutrition			Eyes Medical Attention	Tonsils Medical Attention
						Number	Per cent.	3	Under 3	Over 3		
Metropolitan Schools												
Boys	16,915	5,640	1,647	1,569	1,569	....	....	15,799	172	944	....	....
Girls	15,967	5,031	1,440	1,291	2,908	....	....	14,572	218	1,177	....	....
Total	32,882	10,671	3,087	2,860	6,012	1,215	3·69	30,371	390	2,121	1,482	186
Country Schools												
Boys	12,062	3,127	888	1,280	1,445	....	....	11,566	121	375	....	....
Girls	11,575	2,821	863	1,010	1,298	....	....	10,923	76	576	....	....
Total	23,637	5,948	1,751	2,290	2,743	765	3·23	22,489	197	951	953	81
State Total												
Boys	28,977	8,767	2,535	2,849	4,549	....	....	27,365	293	1,319	....	....
Girls	27,542	7,852	2,303	2,301	4,206	....	....	25,495	294	1,753	....	....
Total	56,519	16,619	4,838	5,150	8,755	1,980	5·93	52,860	587	3,072	2,435	267

Table II

HOME VISITS BY SCHOOL NURSES, 1962

Total Visits *re* Medical Attention	Received Attention	Promised Attention	Disinterested	Out or Left District	Visit to Cases Referred for Home Treatment	Parents Phoned or Called at Office
3,622	1,689	890	62	671	55	115

Country Area : 34 visits made.

Table III

HYGIENE INSPECTIONS BY NURSES FOR PEDICULOSIS

—	No. of Children Examined	Number Notified	Percentage
Metropolitan	60,252	66	·01
Country	19,813	107	·05
Total	80,065	173	·02

Including re-visits to above, a total number of 136,406 heads were examined or re-examined.

Appendix XII

SCHOOL DENTAL SERVICE

Following is my report for the year ending 31st December, 1962.

Staff

We are still unable to complete our establishment. One bursar graduate who had commenced duty the previous year forfeited his bond and resigned early in the year while the death occurred of one of the older members of the staff. At the same time no new bursars became available because the only two to graduate in December, 1961, also forfeited their bonds and went into private practice. We therefore had a staff of 10 for most of the year instead of 15.

A retired dentist was once again engaged on a temporary basis and worked for a few months in the Murchison and Eastern Goldfields.

Another permanent North-West Clinic was established early in the year, this time at Port Hedland where a dental suite was built into the new hospital. It is being run on the same lines as that at Derby and the Dentist-in-Charge will make annual visits to Roebourne, Marble Bar, Nullagine and Wittenoom Gorge.

Figures for the School Dental Service

Number of country schools visited	99
Number of metropolitan schools visited	11
Number of native missions visited	11
Number of orphanages visited	8
Number of children examined	8,911
Number of children treated	5,359
Number of children needing no treatment	2,496
Number of children who were to be treated by private dentists	181
Number of children whose parents did not bother to reply to notices sent out	425

Details of Treatment Given—

Silver amalgam fillings	6,971
Copper amalgam fillings	37
Cement fillings	335
Porcelain fillings	1,324
Silver nitrate treatments	399
Gold inlays	7
Other conservative treatments	3,045
Prophylaxis	1,039
Extractions	8,211
Orthodontic treatment	8

The following work was done for the general population (apart from children) by the Dental Officers in Charge of the Derby and Port Hedland Districts :—

Number of native adults attended	255
Fillings done for native adults	38
Extractions for native adults	338
Dentures for native adults	6
Number of white free list patients	84
Fillings for free list patients	74
Extractions for free list patients	61
Dentures for free list patients	18
Denture repairs for free list patients	7
Number of paying patients	823
Fillings for paying patients	594
Extractions for paying patients	782
Dentures (acrylic) for paying patients	80
Denture repairs for paying patients	93
Dentures (chrome-cobalt)	17
Gold inlays for paying patients	28
Fees debited for paying patients	£3,434 19s.

Free work done in Carnarvon District (apart from children) :—

Pensioners or indigents (9) :		
	Extractions	26
	New dentures	5
	Rebase dentures	1
Missionaries (11) :		
	Extractions	5
	Fillings	31
	New dentures	3
	Denture repair	1
Natives (8) :		
	Extractions	9

A. G. McKENNA,
Senior Dental Officer.

Appendix XIII

CHIEF HEALTH INSPECTOR'S REPORT, 1962

ENVIRONMENTAL SANITATION

Applications for the installation of domestic bacteriolytic treatment tanks numbered 9,053 and included 160 six pint systems for use in areas where water supplies are limited. There is increasing use made of installations designed to receive both sewage and sullage wastes. These combined tanks represent 67 per cent. of the total number of approvals.

All pipes and fittings used in these installations must be stamped and tested. In most cases this testing is carried out by the Metropolitan Water Supply Sewerage and Drainage Department but in the case of six pint units 361 cisterns and 248 pedestal pans were examined and approved by officers of this branch.

Demands made on the inspection staff for specialised investigation into fly control, rubbish disposal, food enquiries and other special activities have curtailed the normal number of visits to country areas.

Inspections carried out were :—

Country Towns	77
Housing Sub-divisions	411
Appeals (Section 37, Health Act)	3
Miscellaneous	21
	512

Following are the details of water sampling undertaken by the branch :—

River Swimming Pools	516
Reservoirs and Dams	83
Ocean Beaches	1,749
Miscellaneous	136
	2,484

Ninety-two of these samples were taken in connection with a survey of school swimming classes.

Pest Control

Pest Control Officers of this section maintained supervision over the Government institutions and buildings under the control of this Department and 419 visits were paid to these places for the control of insects, rats and similar pests.

Fly Control

This year the Department carried out three main activities in connection with fly control :—

(1) The training of university students to act as fly control officers.

(2) The supervision of fly control in parks, gardens, bowling clubs, golf courses and similar places.

(3) Investigation of methods for the control of flies in stables.

In June, 1960 a fly control committee was formed to co-ordinate and stimulate fly control in the metropolitan area. This committee has continued to function. It comprises representatives from the Health Inspectors Association, Health Education Council, Local Government, Department of Agriculture and Department of Public Health. During 1960 a small number of senior university students who had received special training in the biology and control of house flies were employed by two or three local authorities to carry out house to house inspections. These inspections were designed to demonstrate to the householder where fly breeding was occurring or could occur and to advise on the proper methods of control. The prime purpose of this advice was to inculcate the adoption of better sanitation as a preventative against fly breeding.

It was found that the use of these students was of considerable benefit and the improvement in general sanitation and public awareness of the fly problem was obvious in the areas where they operated.

Consequently, many local authorities employed these auxiliary officers in the following year and in 1962 the Department arranged for the training of sixty students who were employed by nineteen metropolitan councils during the Christmas vacation period.

These students visited 50,421 premises and discovered 12,302 breeding sites. These breeding places were distributed as follows :—

	%
Rubbish Bins	19
Lawn Clipping Heaps	19
Manure Heaps	16
Rubbish Pits	15
Poultry Pens	12
Garden Beds	9
Compost Heaps	7
Incinerators	3

Three country towns, Albany, Bunbury and Northam also employed students and conducted very successful anti-fly campaigns.

Departmental inspections were carried out of schools, parks and gardens, bowling clubs, golf courses, etc., in the Metropolitan area and advice was given to the responsible officers in these places on the best methods of fly control. Fly breeding was found in 31·2 per cent. of these inspections.

Also during the year officers of the pest control section conducted a considerable amount of experimental work on the control of fly breeding in stables. This investigation was quite successful and it was found that using modern insecticides a cheap and practical method of fly control could be obtained.

In addition to these general activities, a special problem in fly control presented itself when Perth became the host city for the Commonwealth Games. Many of the Games venues were situated in localities surrounded by large areas of uncultivated bushland and some nuisance from the bush fly (Musca sorbens) was expected. To consider this problem a special committee was formed, comprising representatives from the Department of Public Health and the Perth City Council together with the Government Entomologist. This committee recommended that as little was known about the breeding habits of the bush fly in the Perth area, the only practical method of control was by the application of residual insecticides. Acting on this recommendation, the Perth City Council and the Department of Public Health co-operated in the application of insecticides to all Games venues before and during the Games period. In addition, an area of 950 acres of adjacent land was treated at intervals with the T.I.F.A. fogging machine to establish a barrier between the bush and the venues, 2,191 gallons of insecticide were used on these operations.

A careful appraisal of this work indicated that it resulted in a considerable reduction in the number of flies in these areas.

Rubbish Disposal

Officers of the branch are still actively engaged in work associated with the Metropolitan Rubbish Disposal Planning Committee.

North-West (Kimberley Area)

A tremendous step forward in the inspection services was the appointment of an inspector to serve the shires of Broome, West Kimberley, Halls Creek and East Kimberley, including the Ord River Irrigation Area.

This Officer, stationed at Derby, will make periodic visits by road or plane to all towns and settlements in these districts which cover an area of 162,363 sq. miles.

FOOD AND MEAT INSPECTION

Meat inspection was carried out by Departmental inspectors at four major metropolitan abattoirs on 1,197,597 animals, comprising 71,524 cattle, 6,686 calves, 912,369 sheep and 207,018 pigs.

In addition to the metropolitan area, meat inspection was carried out in eighteen major country centres bringing the total number of animals inspected to 1,580,137. Of these 6,108 carcasses, 7,373 part-carcasses and 155,690 organs were condemned. Details of these condemnations are shown in Appendix XXV.

Seven hundred and ninety-one samples of food were examined. The bulk of these were dessicated coconut (343) and egg pulp (392) submitted for bacteriological investigation. Two samples of vinegar were found to be below the prescribed standard and legal proceedings were taken.

Surveillance of imported food was maintained and included the inspection of 1,478·5 tons of fish.

PUBLIC BUILDINGS

A constant check is kept on all public buildings both old and new. Plans for 264 public buildings were approved during the year, which included new buildings, alterations or additions to existing buildings or electrical re-wiring. The Department is grateful to the Principal Architect and other officers of the Public Works Department for their help and assistance in this work.

HEALTH INSPECTORS' CONFERENCE

The Annual Health Inspectors' Conference was held at the Subiaco City Hall on 26th-28th September, 1962.

The Conference was opened by the Minister for Health, Hon. Ross Hutchinson, M.L.A., and was followed by an address by the Commissioner of Public Health, Dr. L. Henzell.

The following addresses were given :—

" Recent Public Health Developments " (Dr. W. S. Davidson).
" Communicable Diseases Control " (Dr. D. J. R. Snow).
" River Pollution Control " (Mr. J. Pericles).
" Argentine Ant Control " (Mr. C. Jenkins).
" Poultry Processing " (Mr. Murray Hamilton).
" Occupational Health " (Dr. D. D. Letham).

This Conference was very successful. It was attended by nearly all town and country inspectors who were able to participate in an exchange of views on many subjects of mutual interest. The addresses and the general discussion periods were very much appreciated by all those present.

C. E. FLOWER,
Chief Inspector.

Appendix XIV

REPORT BY THE PRINCIPAL MATRON, NURSING SECTION

HOSPITAL STAFFING

It is pleasing to report that this year it has been possible to maintain hospital staff at a higher level than for many years. To some extent this is due to Perth being the venue for the Commonwealth Games, and whilst most trained nurses from other States sought positions in or close to Perth, quite a number were willing to accept country posts ; the hospitals being able to release them for the Games period.

The employment of Nursing Aides has been maintained at a high level. The demand for this grade of nurse points to the need for more training hospitals for Aides. All young girls without nursing experience, who seek employment as Nursing Assistants, are referred to Nursing Aide Training. Many are interviewed and considered suitable, but because there is now a six months Waiting List of applicants, many who cannot afford to wait to enter training are lost. It is expected that the Bunbury District Hospital will become a Nursing Aide Training School as soon as the new Nurses' Home is built.

SENIOR NURSING APPOINTMENTS

Miss L. Bohan, Dip. N./Admin., appointed Matron of the Northam District Hospital.

Miss D. Daly, Dip. N./Admin., appointed Matron of the Collie District Hospital.

SCHOLARSHIPS AWARDED FOR POST-GRADUATE STUDY AT THE COLLEGE OF NURSING, AUSTRALIA, IN 1962

Nursing Administration Course

Miss K. D. Hawkins, Infant Health Department.
Miss E. Corrigan, King Edward Memorial Hospital.

Sister Tutor Course

Miss J. E. Greenhalgh, Princess Margaret Hospital.
Miss L. K. Pearse, Princess Margaret Hospital.

NURSING BURSARIES

NURSING BURSARIES AS AT 31st DECEMBER, 1962

Bursaries Granted for Year	No. Granted	Bursary Completed		With-drawals		Bursars Graduated and still Nursing		Expected Number of Nurses Graduating during Year					Total	
		No.	Per cent.	No.	Per cent.	No.	Per cent.	1963	1964	1965	1966	1967	No.	Per cent.
1956 and 1956–57	40	4	10·0	28	70·0	12	30·0	....	....	....	....	....	....	....
1957 and 1957–58	67	1	1·5	45	67·2	21	31·3	2	....	....	....	....	2	3·0
1958 and 1958–59	52	....	....	19	36·5	10	19·2	32	....	....	....	....	32	61·5
1959 and 1959–60	60	....	....	17	28·3	2	3·3	3	37	....	....	....	40	66·6
1960 and 1960–61	73	....	....	12	16·4	....	....	....	5	56	....	....	61	83·5
1961 and 1961–62	64	....	....	8	12·5	....	....	....	1	4	51	....	56	87·5
1962 and 1962–63	66	....	....	1	1·5	....	....	....	....	....	4	61	65	98·4
Total	422	5	1·2	130	30·8	45	10·7	37	43	60	55	61	256	60·7

It will be noticed that the withdrawal rate is high. This mainly occurs in the first year after training and is due to marriage or desire to travel interstate or overseas. However, since the Royal Perth Hospital decided to limit staff nursing appointments to a minimum of 12 months, bursars training at this hospital have been prevented from carrying out the agreement in respect of six months service in their own Training School. This has resulted in some withdrawals, although the Department has endeavoured to meet the needs of bursars.

PRIVATE HOSPITALS AND MATERNITY HOSPITALS

Routine inspections of Private Hospitals and Maternity Homes were carried out during the year 1962.

Number of Inspections

" A " Class	24
" C " Class	130
Maternity Homes	30

A number of preliminary inspections made, accompanied by a Health Inspector, to properties that were under consideration for conversion to " C " class registration.

Bethel Hospital, Guildford has re-opened and is licensed for 19 beds.

The Silver Chain and Bush Nursing Association (Inc.) has built a new Alfred Carson Hospital licensed for 61 beds.

Albany Maternity Hospital has been converted to a " C " Class Hospital known as Seaton Lodge, licensed for 20 beds.

Lyndale Hospital, Claremont, and Craigie Hospital, Darlington. Closed.

A number of hospitals have increased their licensed beds by additions to their buildings.

There are now 62 Registered " C " Class Hospitals providing a total of 1,305 beds.

NURSE TRAINING

Recruitment—1962

The main senior High Schools in the metropolitan area and country have been visited by Miss E. Harler, Organiser of Nurse Training, during the year. Matters concerning general and Nurse Aide Training and Nursing Bursaries discussed with School Principals.

Many girls have been interviewed at the Government School of Nursing and information given regarding essential subjects required in general education to conform to nursing entry requirements.

Shortage of Tutors

The shortage of qualified Tutors is most keenly felt in country training schools. Northam District Hospital has been without a Tutor since March and the teaching is carried out by the Matron, Miss Bohan. The Tutors at the Government School of Nursing spend time at Northam when the School is in recess. To give nurses adequate training, more nurse teachers are required and it seems that we should look for areas within the state where nurses interested in teaching can obtain the necessary skills to assist them in this field of work. It is frequently found that experienced nurses who would be interested in teaching cannot, for personal reasons, absent themselves from Perth for a long period to undertake Post Graduate Courses at a Nursing College, but if suitable areas of instruction could be used within the State, it is likely that many nurses would avail themselves of such opportunities. This would go a long way towards meeting the need for nurse instructors.

The experience afforded student nurses at the Repatriation General Hospital, Hollywood, is deeply appreciated in that nurses admitted to the Preliminary Training School are able to observe hospital routine during this period and senior nurses from Geraldton and Northam Hospitals are allowed two weeks experience in the Operating Theatre. This is very valuable to the students.

In-Service Training

In July a course of training was set up at Sunset Home for orderlies employed in nursing duties.

Refresher Course for Nurses

There is a need for organized Refresher Courses for inactive trained nurses who wish to return to active practice. Some attention is being given to this by the State Committee of the College of Nursing, Australia, but it could well be a project too big for a voluntary Committee to handle and it may be desirable or even necessary for organized Courses to be set up under the auspices of the Department.

It is becoming increasingly evident that hospitals should be staffed to a higher level with trained nurses and the number of student nurses recruited for training reduced, and in order to obtain a desirable level of trained nurses a greater number of married nurses will have to be employed. For this reason, it is necessary that Refresher Courses be made available so that the nurse who is married and away from the field of active nursing, knows that there is an avenue by which she can gain re-entry to her profession.

PHYLLIS F. LEE,
Principal Matron.

Appendix XV

NURSES' REGISTRATION BOARD

1. I submit herewith a report on the activities of the Nurses' Registration Board for the year ended 31st December, 1962.

2. The constitution of the Board :—

Chairman—

Dr. Linley Henzell, Commissioner of Public Health—*Ex officio* Member and Chairman.

Members—

*Dr. W. B. C. Gray, A/Inspector General Mental Health—*Ex officio* Member.
Dr. L. E. LeSouef, Medical Practitioner—Nominated by the Australian Medical Association.
Dr. Roland Nattrass, Practising Obstetrician—Nominated by the Australian Medical Association.
Miss P. F. Lee, Principal Matron, Public Health—*Ex officio* Member.
Dr. W. D. Neal, Specialist in General Education—Nominated by the Minister for Education.
†Miss K. M. Johnson, General Nurse—Nominated by the Minister for Health.
‡Miss G. T. Sibert, Midwifery and Infant Health Nurse—Nominated by the Minister for Health.
Mrs. W. Green, Mental Health and General Nurse—Nominated by the Minister for Health.
Mr. K. J. Brett, Tutor—Nominated by the Minister for Health.
Miss V. Steel, General Nurse—Elected by the Registered General Nurses.
§Mr. W. T. Highet, Mental Nurse—Elected by the Registered Mental Nurses.
Miss B. Grant, Midwifery Nurse—Elected by the Registered Midwifery Nurses.

* *Vide* Dr. D. Moynagh—Resigned 1/6/62.
† *Vide* Miss G. A. Siegele—Resigned 19/4/62.
‡ *Vide* Miss A. J. Mattinson—Resigned 19/4/62.
§ *Vide* Mr. W. Bailey—Resigned 6/4/62.

Officers—

Miss D. H. Bailey—Education Officer (Nursing) Public Health Department.
Mr. D. R. Warner—Secretary.

There were 11 ordinary and one special meetings of the Board and 14 meetings of the several committees.

3. *Registrations.*—The following table sets out the number of initial registrations/enrolments effected during the year (the figures for 1961 in brackets) together with the source of the qualifications of the persons registered.

Division of Register	By Examination in this State	By Examination outside this State	Total
General Nurse	324 (305)	266 (225)	590 (530)
Children's Nurse	2 (2)	2 (—)	4 (2)
Mental Health Nurse	15 (11)	3 (8)	18 (19)
Mifwifery Nurse	102 (91)	140 (109)	242 (200)
Nursing Aides	177 (133)	23 (27)	200 (160)
Mothercraft Nurse	16 (18)	1 (5)	17 (23)
Dental Nurse	9 (8)	— (—)	9 (8)
Tuberculosis Nurse	37 (42)	— (—)	37 (42)
Infant Health Nurse	18 (17)	13 (9)	31 (26)
Total	700 (627)	448 (383)	1,148 (1,010)

4. *Examinations.*—The Board conducted 27 sets of examinations, involving 1,232 candidates and 306 examiners.

These included the First Year examinations in addition to those numbers mentioned under 3 above.

Examination	No. of Candidates
1st Year Professional	450 (inc. 35 Pt. 1 only)
1st Year Mental Health	33

5. *General.*—Some items of major importance resolved by the Board were :—

(a) *The Principle of a Generalised Basic Pattern of Nursing Training* was formally approved by the Board and investigations concerning implementation are proceeding.

(b) *The National Nursing Education Division* of the Royal Australian Nursing Federation and the Florence Nightingale Committee of Australia sought the Board's assistance in a survey concerning the " Wastage of Trained Nurses ". This assistance was readily given.

(c) *Minimum General Education Entry Level.*—The Board agreed to recommend the raising of this from 2nd Year High School Certificate level to 3rd Year High School Certificate for all trainees entering on or after the 1st January, 1963 (provided that for two years a 2nd Year Certificate may be accepted subject to a satisfactory Vocational Guidance Report) with the exception of Nursing Aides and Mothercraft Nurses. A survey covering the preceeding three years showed that the general education entry level of all trainees for the General Certificate was as follows :—

Studied to—	Percentages
Leaving	33
Sub-Leaving	10
Junior	48
2nd Year High	9
Total	100

(d) *St. John of God Hospital, Subiaco.*—As from January, 1963, this Hospital plans to undertake training of lay persons for the general and midwifery certificates.

(e) *Perth Chest Hospital in Association with the King Edward Memorial Hospital and the Fremantle Hospital* has been approved as a training school for the General Certificate.

(f) *Nurses' Registration Act.*—The Board feels that a full review of this Act would be desirable.

(g) *Working Committee on the Curriculum.*—The Board has set up a Working Committee and various subsidiary area committees to consider and report on the whole of Nurse training and education in this State.

(h) *Survey of Nurse Education,* 1960–62.—It is anticipated that this report prepared by the Education Officer (Nursing) Public Health Department, Miss D. H. Bailey, will be completed early next year.

DES. WARNER,
Secretary.

Appendix XVI

REPORT OF THE STATE X-RAY LABORATORY'S ACTIVITY FOR THE YEAR 1962

The State X-ray Laboratory and associated workshop is well equipped to handle highly technical repairs required to maintain modern X-ray and Electromedical equipment.

The assembly of special skills and resources which this technology demands are available for many other applications of Applied Science in Medicine.

It was noticeable during the year 1962 that many more requests for assistance in this field were received, and currently a number of projects are in hand which are not necessarily X-ray.

The Physics and Radiation Service Division of the Laboratory has become increasingly active. Surveys, monitoring and allied activities have risen sharply, and, as we are understaffed in this division, a considerable number of routine surveys have not been undertaken. The return of the Physicist, Mr. B. King, from study leave at the Sloan Ketting Institute, U.S.A., anticipated in April, 1963, will ease the problem.

G. E. BENNETT,
Officer-in-Charge.

REPORT FROM THE STATE X-RAY LABORATORY ENGINEERING DIVISION

During the year ending 31st December, 1962, the Engineering Division lost the services of Mr. G. Mortlock who resigned to take up the position as Communication Engineer for TVW7. Mr. McDonald, who holds an Associateship in Communication Engineering and Mr. J. Yeatman (trainee) joined the staff in July.

The total staff is now 15, comprising nine engineers (five are qualified electronic/X-ray engineers, two junior engineers and two trainees), one fitter/turner plus the radiation staff comprising the physicist and one technician (one engineer has been transferred to radiation work relieving the physicist), two radiographers and one typist.

Engineering

X-ray and electronic activities involved repairs, modifications and breakdown services to 94 X-ray units in country centres and 52 X-ray units in the metropolitan area. A total of 94 light beam diaphragms have now been installed in metropolitan and country centres. Of the 98 electromedical units currently maintained, 20 are electrocardiographs, 23 electrosurgical units and 55 electronic physiotherapeutic machines. The total number of job debits raised during the year was 381 representing 900 jobs.

All the X-ray facilities at Kalgoorlie Hospital were transferred to the new building during July and August. This activity, together with the installation of an X-omat automatic film processor, a Picker ceiling tubemount and the equipping of the third X-ray room represented the largest multiple re-installation ever undertaken in the State.

Of the two 400 ma X-ray generators rebuilt for specialised applications, the one for Kalgoorlie Hospital was fitted with an Iontomat automatic electronic control and set up for silicosis control technics. At Fremantle Hospital another X-ray unit was rebuilt for the Tomographic and IVP rooms. A self contained mobile unit was built at the request of Dr. Laurie for the Perth Chest Hospital for radiography of heart specimens. (Details are shown in Appendix A.)

Fifty country centres were visited for the purpose of routine maintenance, breakdowns, repairs or installation of new plant. Six major installations have been completed and performance acceptance tests carried out. The first three phase 100 ma unit installed in W.A. at the Fremantle Hospital was accepted and considerable experience is currently being gained with this advanced equipment.

A Cinematographic unit was made up in the workshop and installed for trials at Princess Margaret Hospital the results of which are the basis for recommendations to P.M.H. for cardiac catheterisation X-ray facilities.

The Cine unit has now been modified and is installed at the Perth Chest Hospital, being currently used for investigation and diagnosis in the X-ray Department. A commercial closed circuit TV chain was obtained on trial and tested at the Perth Chest Hospital for Kineradiography. The experience gained is currently being put to good use on the installation of closed circuit TV in the Neurological X-ray department at R.P.H. New electronic switch controlled X-ray equipment at R.P.H. was installed and tested under the laboratory's supervision.

X-ray facilities at the Perth Chest Clinic have been improved with the installation of a new X-ray generator controlled by an ionisation chamber and the PAKO fully automatic film processing plant. A new mobile caravan completed by Perth Technical College for the Perth Chest Clinic was fitted with the latest rectified tankhead X-ray unit capable of operation from a domestic power point.

X-ray accessories planned and built for the Perth Dental Hospital included film processing equipment for both the mobile dental van and the new X-ray department. Two X-ray bucky tables were built from salvage equipment as was a supporting gantry for our 300 KV X-ray unit. Sixty-one cassettes were refurbished for country centres and three mobile pedestal buckies completed.

Medical Electronics

A cardioscope display unit was built at the request of Dr. Heymanson for the Pneumothorax Unit, Perth Chest Hospital

The closed heart defibrillator built for R.P.H. has been modified to incorporate an automatic electronic cutout.

To improve X-ray output for radiography of silicosis dusting at Kalgoorlie a transistorised frequency changer has been developed and will be installed after reliability tests are complete.

A Chemostat constant population bacteria detector for the Microbiology Department of the Medical School and a Temperature measuring amplifier to a tolerance of 0·1°C. for bacteria control was also designed and built.

Dr. Cliff, Pathology Department, Medical School, requested an elapsed time camera control for recording blood flow ; this was completed during October.

A 700 volt DC continuously variable power pack for Electrophoresis was made for the Public Health Laboratories. Public Health Photographic Department was built a portable transistorised Flash Integrator of great sensitivity which was designed in the laboratory.

During the year all electrosurgical units at the R.P.H. were modified to low voltage control and several machines were rebuilt.

A nitrogen boost control for accurate development of film badge monitoring film was built and installed.

Assistance has been given to the Civil Defence Organisation in repairs to monitoring equipment. The laboratory has agreed to check new instruments on delivery and carry out maintenance for the organisation.

A Linear Accelerator beam flatness check device was devised and built in the laboratory ; tests with it are proceeding. Our engineer and two assistants at the Institute of Radiotherapy have maintained this machine without any major breakdowns. It is of particular interest to note that the vacuum refrigeration unit installed during the year is functioning successfully. See Separate " Report on Performance and Maintenance of Linear Accelerator."

A considerable amount of detailed planning for both regional and district hospitals' new X-ray installations, have been undertaken whilst requests for advice to modernise existing installations have been numerous.

Instruction courses arranged for country hospital operators have included practical demonstration and tuition on workshop X-ray equipment. Further instruction was undertaken in the field by our relief radiographer at four country centres.

Relief for country operators was provided on eleven occasions. Film and chemical consumption has been continuously checked by the laboratory. Eighty-nine thousand two hundred square feet of film was used which was approximately 600 square feet less than the previous twelve months. See Appendix C " Average film consumption in Country Hospitals."

During 1962 the laboratory has supplied an electronic technician, three days per week, to operate and control the electronic monitoring equipment used during cardiac catheterisation operations at Princess Margaret Hospital.

REPORT ON PERFORMANCE AND MAINTENANCE OF LINEAR ACCELERATOR, 1st AUGUST, 1962 TO 31st DECEMBER, 1962

Maintenance and Breakdowns

There were no major breakdowns during the above period, and maintenance proceeded, as in the previous report, during overtime hours.

One minor breakdown occurred, involving postponement of treatments for two days. Two ceramic wedges were replaced and performance restored in the minimum time.

A delay of approximately one hour occurred when the original magnetron failed and was replaced. Final adjustments were made after treatment hours.

Modifications and Additions

Several further modifications were carried out including :—

(1) A rotation warning device to protect a sensitive motor-generator which had failed during the previous period.

(2) Wedge light indication in control room.

(3) Reorganising gun filament connections for improved stablility.

(4) Construction of a device for checking the flatness of the X-ray beam. This was designed and constructed at the S.X.R.L. Preliminary tests were very encouraging.

Vacuum System

(1) The anticipated improvement due to addition of refrigeration for the diffusion pump has been fully realised. It is expected that ultimately the performance will be considerably better than that of the average Linear Accelerator vacuum system.

(2) The " Difftector " protective device designed and constructed by the S.X.R.L. staff and fitted during the previous period has operated without change of calibration or evidence of wear for eleven months, and has completely eliminated faulty operation of the device it has replaced. A spare unit has been constructed and details will be offered shortly to other centres.

S. ROSS,
Electronic Engineer, State X-ray Laboratory.

Appendix XVII

PESTICIDES ADVISORY COMMITTEE

The Department is grateful to the Director of the Government Chemical Laboratories, Dr. L. W. Samuel, Mr. F. W. Avenell, Registrar of the Pharmaceutical Council of W.A., and Mr. C. F. H. Jenkins, Government Entomologist, for their assistance as members of the Pesticides Advisory Committee.

The Committee examined and approved 122 applications for the registration of new pesticide products, 7 registrations were withdrawn, making the total now registered 1,292.

FOOD & DRUG ADVISORY COMMITTEE

Two meetings of the Food and Drug Advisory Committee were held during the year. Draft regulations submitted by the Food Standards Committee and the Food Additives Committee of the National Health and Medical Research Council, were examined and the following were recommended for adoption :—

Vitamins and Minerals.
Food Additives.
Fish and Fish Products.
Artificial Sweetening Substances.

Other drafts examined were :—

Skim Milk.
Malted Milk Powder.
Condensed Milks.
Flavoured Milk.
Dairy Ice and Dairy Ice Mix.
Lemon Butter, Fruit Spread and Fruit Filling.
Introductory Regulations.

The Department's thanks are due to Mr. W. A. Ashton, Mr. M. G. Muggleton and Dr. L. W. Samuel for their work on this Committee.

Appendix XVIII

DIVISION OF OCCUPATIONAL HEALTH

STAFF

Due to the steady increase and volume of work, Mr. W. H. Moyle, who had been appointed a part time Field Officer in May, 1961, was appointed full time in May, 1962.

Dr. T. C. Anthony was appointed as Consultant Dermatologist so that constant expert attention could be given to Occupational Dermatitis, a major problem in Occupational Health.

In December, Sister O'Sullivan who had been part time Sister, Occupational Health, resigned to return to Sydney ; and her place was taken by Sister M. Wilkinson who was appointed to commence duty in early January, 1963, as full time Sister, Occupational Health.

The opportunity is taken of expressing appreciation of Sister O'Sullivan's singular success as a pioneer of Occupational Health nursing for this Department.

OCCUPATIONAL HAZARDS

1.—*The Pneumoconioses*

Silicosis (continued from 1961)

Place of Work	No. Visited 1962	1st X-ray 1962	Silicosis Present	Total 1st X-rays	Total Silicosis	Re-ray 1962
Foundries	6	103	....	846	16	79
Quarries	....	28	....	116	5	3
Ore and Rock Crushing (including Masons)	1	22	....	61	1	3
Potteries and Brickworks....	2	73	....	155	1	2
Sandblasting	1	4	....	17	....	2
	10	230	....	1,195	23	89

It is of interest that no new cases of silicosis have been found. This is not unexpected especially as many of the first X-rays were of new employees.

The survey of employees having been virtually completed, a survey of foundries was commenced, and, in conjunction with the Government Chemical Laboratory, dust counts were made (with a Midget Impinger) in one of the largest foundries. Investigation took many months, and the findings were not unexpected, the highest dust counts being found principally with grinding, chipping and brushing. High counts were also found during the loading and operation of rumblers and an excessively high found was found with core-blowing in which the silica content was, however, only 1·5 per cent.

Equating average counts in these processes, to recommended maximum concentrations (National Health and Medical Research Council) it was found that these varied between two and six times the recommended maximum concentrations, most counts being two or three times this figure.

An approach to management has been made with recommendations based on " Conditions in Steel Foundries, First Report of Joint Standing Committee." Ministry of Labour 1960. It is hoped to make this approach to other foundries in which there appears to be a hazard from silica.

Asbestosis

A survey of employees was completed and one further case of asbestosis reported. Dust counts were taken in one asbestos manufacturing plant, and were commenced in a plant associated with the manufacture and handling of lagging for water pipes.

In the asbestos manufacturing company from which there had been three cases of asbestosis and one probable case, the dust counts were satisfactory.

A survey was made on two occasions and in no case was the count above 150 particles/cc (Midget Impinger). This was not surprising, as the firm had gone to considerable pains to reduce the dust by various means, most notably by mechanisation, enclosure and exhaust ventilation.

The counts in the second Company were all high and indicated a significant exposure to silica as well as asbestos.

When a survey was made on employees of this firm, two cases of suspected asbestosis were discovered. It is planned to repeat the counts if necessary and advise management on measures of prevention of dust.

2.—*Noise*

Experience has shown the need for follow-up of employees after the fitting of ear plugs. The Occupational Health Sister therefore, spent a considerable portion of her time in following up these employees.

In consultation with the Ear, Nose and Throat Consultant, particular attention was paid to a group of 31 men associated with butt welding and it was found that the men persisted with the wearing of their plugs following a total of nine visits by the Occupational Health Sister.

In all during the year, 128 audiograms were taken and 120 pairs of ear plugs were fitted. This was done only after a preliminary sound level survey had been undertaken by the Commonwealth Acoustic Laboratory.

Close co-operation between the Ear, Nose and Throat Consultant, the Commonwealth Acoustic Laboratory and the Occupational Health Sister has been invaluable in the promotion of the Hearing Conservation Programme.

Next year with the availability of the Occupational Health Sister on a full time basis, it is hoped that this programme will proceed more rapidly.

In one plant it was found more practicable to provide engine drivers with ear muffs, and this was done.

The practice of examining all ears before providing plugs or muffs has been continued.

3.—*Dermatitis*

During the year circulars were sent to Insurance Companies, requesting prompt notification of cases of dermatitis. Response has been fair and this has enabled the Skin Consultant to follow-up a number of cases.

The Skin Consultant undertook a survey of cement and lime plants, plasterers and builders ; the use of epoxy and polyester resins and fibre glass.

During the year 41 visits to places of work were made by the Skin Consultant and/or the Occupational Health Sister ; 63 employees with a history of occupational dermatitis were interviewed. The purpose of these visits was to instruct management and staff on personal protection against skin irritants and where possible to advise management on other methods of prevention.

4.—*Pesticides and Fumigants*

Pesticides

Sodium fluoroacetate.—" 1080 " bait is being manufactured for the Agricultural Department by a single company with a manager and two employees.

Methyl cellulose solution is added to the 1080 solution with which the grain is impregnated, dried and twice treated with polyvinyl acetate solution. This latter process has the effect of keeping down the dust and also helps protect the persons handling the baits in the field.

From the first operation of the plant a number of air samples in the breathing zone of employees have been taken ; some have exceeded the maximum allowable concentration of 0·1 mg./cubic metre, but modifications suggested by this Department are being undertaken to minimise the hazard.

Employees are using dust respirator cartridges continuously, during exposure, and will continue to do so until the atmospheric concentrations are consistently no higher than 0·1 mg./cubic metre.

Pest Control Companies—Arsenic.—A suspected case of arsenic poisoning in a pest control operator was reported to this Department ; following this an investigation of pest control operators using arsenic was made.

Twelve 24 hour specimens of urine were taken from pest control operators using arsenic trioxide, mainly in powder form. The concentrations varied from 0 to 0·3 p.p.m., and all these men were without symptoms. One man with 0·5 p.p.m. was a doubtful case of arsenic poisoning.

At first nails, and hair were collected for tests but it was considered any extra information they might provide, did not warrant the time taken for the investigation. It was found that all companies had been providing respiratory protection but in some, especially the smaller more inexperienced firms, the equipment was not satisfactory.

Opportunity was taken to advise these companies on proper protection.

During the course of this survey enquiries were made about the use of other pesticides such as chlorinated hydrocarbons and organic phosphates, all of moderate goxicity or less. These was no evidence that any employees were suffering from toxic effects due to these.

Market Gardens.—Organic Phosphates and Arsenic.—Following the occurrence of two severe episodes of organic phosphate poisoning in market gardeners, the Field Officer visited 14 market gardens in and around the metropolitan area. This was at a time when spraying operations were not being carried out ; nevertheless, useful information was obtained. It was found that 10 gardeners were using parathion as well as many other pesticides. The storage was not safe in four cases ; care of spraying equipment was reasonable ; no special protective clothing was worn, and only three gardeners were equipped with respirators. Most of the gardeners claimed they had suffered no ill effects from spraying, but they had very little idea of the toxicity of the chemicals they were using. Many had only a scanty knowledge of English. It is proposed to check the actual working conditions during the summer months.

In the Geraldton area 13 market gardens were visited. The same faults were apparent, lead arsenate being the pesticide most commonly used.

Fumigants

Methyl Bromide.—A survey on the use of this fumigant revealed that in Western Australia it is being used on an increasng scale, probably of the order of two or three tons annually. The main users are nurserymen, dried fruit producers, pest control companies and market gardeners and it is anticipated that flour mills will be using it on an increasing scale in the future.

A survey of operators using methyl bromide was commenced and blood bromide tests (Conway's Micro Diffusion method) are being undertaken by the Public Health Laboratories. While considerable fluctuations in blood bromide levels in individual operators have been observed, no case of poisoning has occurred.

Education on the safe handling of methyl bromide has been undertaken by the Field Officer during a survey with special emphasis on safe storage and the use of a halide lamp for the detection of methyl bromide, with a view to establishing safe waiting periods after fumigation.

Fumigation of Flour Mills.—Following the poisoning of an employee with hydrogen cyanide, the Field Officer made a survey of all flour mills in the metropolitan area and one at Geraldton. It was found that a variety of fumigants were used ; these included phosphine, carbon disulphide, " Millspot " (containing carbon tetrachloride, ethylene dichloride and ethylene dibromide) as well as hydrogen cyanide.

Hydrogen Cyanide

Hydrogen cyanide is the most commonly used fumigant and the gas is generated by the action of sulphuric acid on sodium cyanide.

It was thought that the case of poisoning had been due to the use of insufficient water with the sulphuric acid and the sodium cyanide, with a result that there still remained some sodium cyanide which on agitation in a moist state liberated hydrogen cyanide more than 45 hours after the mixture had been prepared.

Carbon Bisulphide

Carbon bisulphide was used in only one mill and, on advice, the management have ceased to use this fumigant and have agreed to use methyl bromide, adopting a practice recommended by this Department.

Phosphine

Two mills were found to be using phosphine. The management in each mill has been advised against its use and an alternative will be suggested by this Department.

" *Millspot* " appeared to be used safely.

As a result of the survey it is anticipated that fumigation procedures in flour mills will follow a more uniform pattern and will involve less hazard to the operators.

5.—*Solvents*

Trichlorethylene

One case of trichlorethylene poisoning was investigated during the year, the cause being the need to manually handle pieces of metal sheeting, too large to be dipped in and out of a trichlorethylene tank, by the overhead gear. Consequently, the operator concerned was exposed to excessive concentrations of trichlorethylene vapour.

Carbon Tetrachloride

A paper bag manufacturing company was using carbon tetrachloride as a component in a glue used in the manufacture of double walled and wax paper bags.

The mixing of the carbon tetrachloride into the glue was done in an **open** container in a poorly ventilated room. The mixture was then carried in **open** buckets to a paper bag making machine where it was poured into two **open** containers. In all six employees had experienced symptoms of carbon tetrachloride poisoning, *i.e.*, nausea with, in some cases, vomiting ; headache, and lassitude. In none was there evidence of kidney or liver pathology. The management have been experimenting with substitutes for this glue with another not containing carbon tetrachloride or, at least, not requiring mixing.

6.—*Methyl Chloride*

During the year a survey on its use in Western Australia was undertaken by the Field Officer. It was found that it is confined to commercial refrigerators such as those used by butchers and hotels. Its use is diminishing as more modern equipment is replacing the old ; nevertheless it is estimated that about 15 to 20 tons is still being used in refrigeration.

Refrigeration engineers are aware of the toxic properties of methyl chloride but appear to be more concerned about its danger as an explosive. Both the engineers (*i.e.*, employers) and the servicemen reported episodes of toxic effects spread over the years and apparently most of these have been associated with spillage of methyl chloride. Rarely has an illness been sufficiently severe as to result in loss of time from work.

7.—*Lead*

During the year, attention was drawn to the fact that on a construction job 50 per cent. red lead paint was being used as a spray. The men were provided with respirators and dust type cartridges. Urinary lead estimations of six men who had been on the job for several weeks indicated that only two of them, with 0·13 mg. and 0·16 mg., per litre of urine, were unduly high and management were persuaded to provide air line respirators and by the end of the year only one of ten employees had a reading (of 0·11 mg. per litre) in excess of ·08 mg. per litre, which is recognised as a reasonable upper limit for employees exposed to lead.

The Field Officer paid 10 visits to the job after this Department was notified about it in early September, 1962.

8.—*Country Visits*

Geraldton

The Occupational Health Sister, and the Field Officer visited Geraldton and the results of the visit have been incorporated in various sections of the report. However, it is of interest to note that noise problems were encountered, as were pesticide and fumigation problems ; and that the tomato growers showed a lack of knowledge of the safe use of pesticides similar to that of market gardeners in the metropolitan area.

The South-West

The Occupational Health Sister, at the invitation of the Accident Prevention Organisation (Shipping) with the Safety Officer of that organisation and the Safety Officer of the Factories Department visited Esperance, Albany, Busselton and Bunbury. There she made contact with medical practitioners and took part in demonstrations of artificial respiration and cardiac massage.

9.—*Ionising Radiation*

During the year 22 new licences were issued and 83 licencees were relicenced.

Dental X-rays

A notable activity was that of the Dental Advisory Committee on which the Australian Dental Association is represented. A code on the use of X-ray apparatus for dental examinations was prepared by the qualified expert of the Council, Mr. R. W. Stanford and the Senior Inspector, Mr. G. E. Bennett, and accepted by the Committee and was adopted by the Council.

At a meeting of dentists, two Senior Inspectors and an Inspector of the Council (all from the State X-ray Laboratory) demonstrated and discussed the use of dental X-ray equipment.

Diagnostic X-ray, etc.—Exposure of Patients to Radiation

The Department employed three medical graduates, Dr. K. Shilkin, Dr. T. G. Redgrave and Dr. J. Adamson for the purpose of assessing the exposure of patients to radiation from diagnostic X-rays.

Under the direction of Mr. R. W. Stanford, the qualified expert to the Radiological Advisory Council, they visited various centres where diagnostic X-rays were being taken and measured the dose to the gonads resulting from various X-Ray techniques.

This was considered to be a pilot survey, one purpose of which is to indicate the need or otherwise for further surveys in this State and the rest of Australia, and also to compare the findings with those of Medical Research Council in Great Britain. The distribution of medical diagnostic X-rays (not including Mass Miniature chest X-ray) is not markedly different from that in Great Britain (Adrian Report). However, there is a higher incidence in Western Australia for both males and females over 60 years ; and in Western Australia, a lower incidence for males under 15 years. The number of examinations per annum, per head of population in Western Australia is only a little more than half that of the United Kingdom. By comparison, however, the numbers of films per examination in Western Australia are 50 per cent. greater than in the United Kingdom. It is to be expected that both these factors will have an influence on the significant genetic dosage.

The full results of gonadal dose measurements are not yet available.

10.—*Mining*

During the year the Department was approached by the Coal Miners' Industrial Union of Workers of W.A., Collie, with a request to investigate the significance of dust exposure in the coal mines at Collie. It was decided to undertake a fairly comprehensive survey of the miners ; and it was arranged that Dr. J. McNulty, Chest Physician, Kalgoorlie should undertake this survey.

Five hundred and thirty-four coal miners, that is, practically all the men, were interviewed and had chest X-rays. The health of the miners generally was very satisfactory and there was no evidence that pneumoconiosis is a problem in the coalfields at Collie. Active pulmonary tuberculosis was found in two men and admission to hospital for treatment was arranged.

POISONS REGISTER

There have been meetings and correspondence with the Commonwealth Department of Health with a view to establishing a Poisons Register with a minimum of delay.

The Commonwealth Department of Health has undertaken to supply lists of substances which are manufactured in one State and transported to others.

Towards the end of the year two Honours graduates in Science, Messrs. C. Shilkin and A. Bealing, working in co-operation with the Chamber of Manufactures, commenced a survey of substances manufactured in Western Australia for local consumption. This should be completed in the early part of 1963 and these substances will be listed in the Poisons Register.

EDUCATION

Lectures were given by the Physician to 5th year medical students, to students of the Industrial Safety course, and 12 items were contributed to meetings of the Occupational Health Committee of the National Health and Medical Research Council. A circular on the treatment of radiation sickness was sent to hospitals and physicians. The Physician also held a symposium on the health of executives, organised by the Institute of Sales Management.

Addresses were given to Health Inspectors, the Marriage Guidance Council, and to a combined meeting of the Association of Employers of Waterside Labour and the Shipowners Accident Prevention Organisation.

COMMITTEES

During the year there was liaison with other Departments, by the presence of the Physician on the State Government Industrial Safety Committee, the Agricultural Safety Committee and the Committee on Air Pollution, and on the Occupational Health Committee of the National Health and Medical Research Council.

ACKNOWLEDGMENTS

Close liaison with the Commonwealth Acoustic Laboratory has continued and steady progress is being made in our hearing conservation programme. Co-operation with the Factories and Inspection Branch of the Department of Labour has been continued.

Special acknowledgment is made of the help of the Government Chemical Laboratory not only in the field of chemical analyses but also in that of extensive dust counts made in the foundry survey. The Laboratory in this Department has given valuable assistance with biochemical tests.

The help and expert advice received from Mr. R. W. Stanford, Head of the Department of Medical Physics, Royal Perth Hospital and who is the qualified expert to the Radiological Advisory Council, has been much appreciated.

The Consultant Ear, Nose and Throat Surgeon and Consultant Dermatologist have considerably helped the Department in their respective fields.

The opportunity is taken to express thanks to the individuals who took part in the Radiation and Poisons Registers survey.

I personally wish to acknowledge the help and advice received from both the Commissioner of Public Health and the Deputy Commissioner of Public Health during the year.

D. D. LETHAM, M.B., B.S. (Melb.), M.R.A.C.P.,
Physician, Occupational Health.

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Appendix XIX

THE ROLE OF THE HOSPITAL IN THE COMMUNITY

by W. S. Davidson

In the last hundred years great advances have been made in the treatment and elimination of disease. Three main stages of progress were marked by the discovery first of the causative organisms of infectious disease, second the discovery of prophylactic vaccination and lastly the advent of chemotherapy and antibiotics.

It would have been thought that these advances plus improvements in medical and surgical techniques would have greatly reduced the demand for hospital beds in that the number of patients would diminish and the length of stay in hospital be greatly reduced. Neither of these things have however occurred and the shortage of hospital beds or the demand for them remains almost as great as ever.

The purpose for which the hospital bed is required today is vastly different from the purpose it was put to several decades ago.

With improved sanitation, therapeutics and social systems, the expectation of life has greatly increased, not only for those born normal and healthy but also for those who are unfortunate enough to be born with defects and inadequacies that previously would have ensured a limited existence in the society of that time. We therefore find ourselves beset with the disease problem of the aged and the mentally and physically infirm to an extent that was never before apparent and these groups have replaced infectious disease in the comparatively young in the demand for hospital beds.

The advent of the internal combustion engine and the tremendous increase in the volume and speed of road transport that arose therefrom also places a tremendous demand on hospital beds for the treatment of road accident casualties. Old Age and Road Accidents are now the main categories in our hospital. The 60 years of age and over occupy 50 per cent. of our Acute General Hospital beds and accident cases occupy 20 per cent.

Because of the nature of the illness from which these groups suffer and because of the growing realisation that every sufferer from disease is entitled to full and adequate investigation and treatment, the length of time a patient remains in hospital has on an average increased rather than decreased. Also, because of the highly specialised techniques considered necessary in this full and adequate investigation and treatment, the cost of building and maintaining hospitals has risen and continues to rise at a rate that produces great concern in the community. In such circumstances it is incumbent on the community to take stock of its hospitals and hospital system to ensure that the role played by these institutions is indeed the best return for the money expended.

In the countries of Western Europe, in the U.S.A. and in the U.K. we see three different approaches to the problem, or possibly three different phases of the same approach.

In such countries as Holland, Denmark and Sweden, the hospital has almost become a status symbol of the country's prosperity, like the automobile in the American family. It is built to enormous proportions, and to meet every demand of every specialist working within it. Many of them have hundreds of empty beds. Although these countries are experiencing an era of unprecedented prosperity there is little individual wealth because of the enormous demands by church and State for the upkeep of social institutions, particularly hospitals.

In the U.S.A. hospitals are largely built by private enterprise, religious or secular, and must pay their way by the fees they charge. In consequence the average American is under the necessity of paying high insurance premia or living in fear of financial disaster should he be admitted to a hospital.

In the U.K. the planning of a hospital system seems to have been given far more organised thought than in the other two regions and whereas the others have concentrated on building the ultimate in gargantuan monuments to disease, the British have endeavoured to provide for everyone a free but adequate hospital system with as little financial strain on the community as possible.

The success of the British system is due to the central control and financial restraint exerted by the Ministry for Health, and although this control and restraint has not always met with unstinted approval from hospital and health authorities throughout the country, it has nevertheless forced these authorities to make full use of the hospital facilities they possess and to seek means of extending the hospital's function in the community to serve a far larger number of patients than can be accommodated in the hospital beds available. The net result of this is that estimates of the number of beds required per thousand of the population have fallen steadily during the past decade despite the increasing proportion of old people that have to be catered for in the community. Large new hospitals are conspicuous by their absence in the U.K.

This is surprising considering the influence a free medical service based on a capitation system must have, and initially in the U.K. did have, on the referral of patients to hospital. To overcome the shortage of beds, hospitals extended the functions of their outpatient departments, and improved the failing status of the general practitioner by providing him with a diagnostic service from the laboratory and radiological departments. Further, to support the family doctor in his care of the patient the hospital consultants are available to the doctor in the patient's own home. This type of service is backed by a variety of domicillary services provided by the local health authority to assist in the general care and nursing of the patient. In the care of the aged, infirm and the mentally sick the hospital has extended the activities of a normal outpatient department to include a day hospital where the patient may remain for the whole day under treatment and return home at night. Not only does the day hospital save capital costs in hospital construction, it also saves in running costs as the staff is a one shift staff compared to the three shift staff required for hospital ward accommodation.

The domiciliary services that evolve when a hospital system extends it activities to the patient's home, required to work in close harmony and co-operation with the hospital. There is therefore, an obvious tendency for the hospital to develop and control its own domiciliary services. This may work admirably where one hospital is the sole and central medical centre for a small community. Where, however, a number of hospitals with the same or different functions are scattered throughout a community with no fixed boundaries for their spheres of operation, it is manifestly uneconomic for each to develop its own domiciliary services because of a lack of concentration of patients in an area for each field worker from a particular hospital. It therefore becomes necessary to set up a field organisation of domiciliary workers, allotted to various districts working under an authority independent of the hospital but working in close liaison with the hospital.

The organisation of such domiciliary services in the U.K. is the function of the Local Health Authority. Under the National Health Act all hospitals come under the Authority of Regional Hospital Boards or Boards of Governors and the Local Health Authorities are charged with the responsibility of providing the domiciliary services. This dual control of the care of the patient does not become unified at any lesser level than the Ministry of Health. This remoteness of unified control in so large a population is not without its difficulties and the success of the scheme depends largely on local personalities and initiative. In some places success is more marked than in others and the degree of initiative or the money available may decide to what extent the hospital develops in the domiciliary field or how far the Local Health Authority develops its activities within the hospital's field of operation. For example, an institution may be set up for the day treatment of patients. If this is developed by the Regional Hospital Board it is a Day Hospital but if it is developed by a Local Health Authority it is a Day Centre. The Day Hospital and the Day Centre may have exactly the same function, the name merely indicates ownership. Depending on the degree of mutual collaboration between the two Authorities, there may be found in Day Hospitals a percentage of the staff on the pay-roll of the Local Health Authority, and in the Day Centres staff on the Regional Hospital Board.

In Western Australia with its small population and the intimate relationship of the Health Department with both Hospitals and Local Health Authorities, there is not that degree of remoteness in control that exists in England and it is indeed fortunate that Hospitals and Local Health Authorities are responsible to one and the same department.

Apart from the economic advantages of arranging domicillary services by districts or Local Health Authorities rather than by hospitals, there are other advantages.

The Local Health Authority is in a much better position to know the people in its area and to organise local community effort including voluntary workers for the care of the aged and infirm and for the prevention of disease. Given the necessary stimulus from an interest by the hospital in the domicillary care of patients the Local Health Authority can develop schemes for domicillary visits by health visitors, nurses, domestic help, etc., and provide transport for patients to out patient clinics and day hospitals. It can also assist in preventing deterioration in old age by providing suitable accommodation for old people and stimulating the growth of social centres, chiropody clinics, etc. By compiling registers of old persons or persons requiring assistance because of sickness or infirmity from information it obtains from its health visitors and voluntary workers, the Local Health Authority can make a much greater contribution to preventive medicine than the mere detection and prevention of infectious disease. As therefore the role of the hospital is changing with our new disease pattern, so also is the role of the Local Health Authority and the collaboration of these two bodies is still as vital a necessity as it was in the days of the all importance of infectious disease. To prevent chronic disease the hospital must provide facilities for the full investigation, the acute treatment and the rehabilitation of the patient and must stimulate and support the development of domicillary services for the continuation of care after the patient leaves the hospital bed. It can do this by expansion of outpatient departments, by Day Hospitals and by collaboration with Local Health Authorities and other domicillary services.

To summarise the main points :—

(1) Because hospital costs have increased greatly in recent years, admission to hospital should be reserved for those people who cannot be treated adequately elsewhere.

(2) Old age patients require a full investigation to establish the full pathology of their condition, adequate treatment and rehabilitation, but when special diagnostic and treatment facilities are no longer required they should be transferred to other institutions, preferably their own homes.

(3) To increase their sphere of activity in the community, hospitals require to make extensive use of outpatient departments and day hospitals.

(4) To assist hospitals to discharge patients to their homes and to the care of the family doctor as soon as possible, local authorities or local bodies must provide facilities for nursing care and supervision in the home and augment these with domestic help services, meals on wheels, and transport facilities.

(5) Statutory Local Health Authorities cannot escape the responsibility for the provision of these community services.

(6) Close collaboration between hospital authorities and Local Health Authorities or other local authorities is necessary for the proper functioning of this plan and the Health Department is in the position to, and has an obligation to bring about and supervise the co-ordination of activities of the various authorities in this field.

(7) The development of domicillary and other services by Local Health Authorities to meet the needs of the hospital will stimulate Local Health Authorities in the development of preventive measures such as social centres for the aged, health visiting, registers of aged and infirm, etc., so that the prevention of chronic disease becomes as great a reality as the prevention of acute infectious disease.

Appendix XX

Royal Perth Hospital, Fremantle Hospital and Princess Margaret Hospital

ALL PATIENTS DISCHARGED, 1962, IN AGE GROUPS

Age Group	Cases			Total Days Stay in Hospital			Average No. Days in Hospital	
	Male	Female	Per cent. of Total	Male	Female	Per cent. of Grand Total	Male	Female
0–14	5,600	3,882	32·12	35,843	25,003	16·98	6·40	6·44
15–19	908	932	6·23	8,655	7,061	4·39	9·53	7·58
20–29	1,339	1,433	9·39	15,162	10,546	7·18	11·32	7·36
30–39	1,336	1,373	9·18	16,029	13,006	8·10	12·00	9·47
40–49	1,172	1,353	8·55	13,994	19,219	9·27	11·94	14·20
50–59	1,554	1,183	9·27	26,973	19,281	12·91	17·36	16·30
60–69	1,519	1,512	10·26	28,058	28,315	15·74	18·47	18·73
70 and over	2,037	2,391	15·00	38,514	52,598	25·43	18·91	22·00
Total	15,465	14,059	100·00	183,228	175,029	100·00	11·85	12·45
Total Male and Female	29,524			358,257			12·13	

Daily Bed Average : 981·5

OPERATION CASES IN AGE GROUPS, 1962

Age Group	Cases			Total Days Stay in Hospital			Average No. Days in Hospital	
	Male	Female	Per cent. of Total	Male	Female	Per cent. of Grand Total	Male	Female
0–14	2,074	1,453	11·95	13,909	10,170	6·72	6·71	7·00
15–19	484	406	3·01	5,384	3,544	2·49	11·12	8·73
20–29	700	783	5·02	10,637	5,336	4·46	15·20	6·81
30–39	626	805	4·85	9,246	7,389	4·64	14·77	9·18
40–49	559	691	4·23	7,458	10,408	4·99	13·34	15·06
50–59	643	495	3·85	13,215	8,515	6·07	20·55	17·20
60–69	611	666	4·33	12,769	13,616	7·36	20·90	20·44
70 and over	798	835	5·53	18,473	23,227	11·64	23·15	27·82
Total	6,495	6,134	42·77	91,091	82,205	48·37	14·02	13·40
Total Male and Female	12,629			173,296			13·72	

Daily Bed Average : 474·8

PATIENTS DISCHARGED DURING 1962—*continued*

Item	Disease	International Classification Categories	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total	Average Number Days in Hospital		Average Age of Patients		Results					
			Male	Female	Male	Female		Male	Female	Male	Female	Sex	1	2	3	4	5
1	Tuberculosis, All Forms	001–019	23	23	404	749	·32	17·6	32·6	48	38	M.	2	11	8	....	2
												F.	....	16	5	....	2
2	Syphilis, Gonorrhoea and Other Venereal Diseases	020–039	9	16	128	227	·10	14·2	14·2	55	33	M.	1	5	2	1	....
												F.	2	13	1	....	....
3	Other Infectious Diseases	040–138	440	384	3,696	3,868	2·11	8·4	10·1	14	16	M.	102	311	12	....	15
												F.	87	280	11	....	6
4	Malignant Neoplasms including those of Lymphatic and Haematopoietic Systems	140–205	626	569	12,409	12,170	6·86	19·8	21·4	63	60	M.	61	253	163	7	142
												F.	52	266	143	7	101
5	Benign and Unspecified Neoplasms	210–239	186	283	1,764	2,761	1·26	9·5	9·8	35	41	M.	38	113	24	4	7
												F.	86	152	35	5	5
6	Allergic Disorders	240–245	225	249	1,607	1,689	·92	7·1	6·9	25	30	M.	23	195	7	....	....
												F.	32	207	7	....	3
7	Diseases of Thyroid Gland	250–254	11	52	126	763	·25	11·5	14·7	48	44	M.	1	5	5	....	....
												F.	5	41	4	....	2
8	Diabetes Mellitus	260	85	121	1,542	2,919	1·25	18·1	24·1	49	60	M.	....	66	14	1	4
												F.	4	95	10	3	9
9	Diseases of Other Endocrine Glands	270–277	21	23	262	448	·20	12·5	19·5	29	46	M.	2	10	8	....	1
												F.	2	11	6	2	2
10	Avitaminosis and Other Metabolic Diseases	280–289	45	47	834	722	·43	18·5	15·4	45	42	M.	2	30	10	1	2
												F.	2	29	11	2	3
11	Diseases of Blood and Blood-forming Organs	290–299	139	95	1,418	1,240	·74	10·2	13·1	37	52	M.	5	76	46	4	8
												F.	5	70	16	2	2
12	Mental, Psychoneurotic and Personality Disorders	300–326	458	649	5,102	9,137	3·97	11·1	14·1	38	41	M.	16	268	166	4	4
												F.	21	478	144	3	3
13	Vascular Lesions affecting Central Nervous System	330–334	224	257	6,753	8,449	4·24	30·1	32·9	63	69	M.	7	124	28	....	65
												F.	2	142	38	1	74
14	Inflammatory and Other Diseases of Central Nervous System	340–357	295	245	5,207	4,015	2·57	17·7	16·4	35	35	M.	31	163	79	6	16
												F.	21	136	71	2	15
15	Diseases of Nerves and Peripheral Ganglia	360–369	63	65	989	993	·55	15·7	15·3	45	52	M.	6	43	12	2	....
												F.	10	46	9	....	....
16	Diseases of the Eye	370–389	469	398	5,293	4,159	2·64	11·3	10·4	39	42	M.	22	392	52	2	1
												F.	31	328	37	2	....
17	Diseases of Ear and Mastoid Process	390–398	214	201	1,377	1,626	·84	6·4	8·1	14	18	M.	8	183	23	....	....
												F.	10	182	8	....	1
18	Rheumatic Fever and Chronic Rheumatic Heart Disease	400–416	56	83	1,451	1,737	·89	25·9	20·1	19	30	M.	5	45	2	2	2
												F.	2	64	11	....	6
19	Diseases of the Heart and Arteries including Hypertension and Arteriosclerosis	420–456	713	613	13,761	12,303	7·28	19·3	20·0	64	66	M.	24	474	75	3	137
												F.	30	405	58	6	114
20	Diseases of Veins and Other Diseases of Circulatory System	460–468	240	240	3,360	3,348	1·87	14·0	14·0	45	48	M.	50	171	11	2	6
												F.	50	171	8	3	8
21	Diseases of Respiratory System	470–527	2,043	1,480	13,931	10,119	6·71	6·8	6·8	22	21	M.	375	1,531	57	9	71
												F.	296	1,133	21	1	29

Item	Disease	International Classification Categories	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total	Average Number Days in Hospital		Average Age of Patients		Results*					
			Male	Female	Male	Female		Male	Female	Male	Female	Sex	1	2	3	4	5
22	Diseases of Buccal Cavity and Oseophagus	530–539	151	164	822	1,085	·53	5·4	6·6	23	27	M.	21	117	10	2	1
												F.	27	128	5	3	1
23	Diseases of Stomach and Duodenum	540–545	275	141	4,383	2,126	1·82	15·9	15·1	53	53	M.	33	208	16	7	11
												F.	14	115	6	1	5
24	Appendicitis	550–553	378	332	3,516	2,707	1·74	9·3	8·2	23	23	M.	176	201	....	....	1
												F.	155	174	1	....	2
25	Hernia or Abdominal Cavity	560–561	333	138	3,568	1,896	1·53	10·7	13·7	43	52	M.	84	226	18	....	5
												F.	35	83	15	....	5
26	Other Diseases of Intestines and Peritoneum	570–578	462	484	4,835	5,366	2·85	10·5	11·1	24	36	M.	90	328	26	6	12
												F.	105	329	20	5	2
27	Diseases of Liver and Gall Bladder	580–586	139	300	2,673	4,904	2·11	19·2	16·3	58	58	M.	28	84	15	2	10
												F.	58	194	31	4	1
28	Diseases of Pancreas	587	33	16	504	292	·22	15·3	18·3	38	47	M.	....	26	2	....	....
												F.	1	10	3	1	....
29	Nephritis and Nephrosis	590–594	76	65	1,297	947	·63	17·1	14·6	21	26	M.	1	56	9	....	....
												F.	1	48	7	....	....
30	Other Diseases of Urinary System	600–609	278	372	3,873	3,866	2·16	13·9	10·4	50	39	M.	44	147	24	54	....
												F.	48	253	28	36	....
31	Diseases of Male Genital Organs	610–617	378	....	5,660	....	1·58	15·0	....	50	....	M.	97	246	15	3	....
												F.	....	....	....	....	....
32	Discases of Breast	620–621	7	49	533	332	·24	76·1	6·8	47	41	M.	1	4	2	....	....
												F.	5	35	3	6	....
33	Diseases of Female Genital Organs, Uterus, Ovary, Fallopian Tubes, Parametrium	622–637	....	961	....	7,341	2·05	....	7·6	....	39	M.	....	....	....	....	....
												F.	132	669	68	90	....
34	Complications of Pregnancy	640–649	....	110	....	676	·19	....	6·1	....	27	M.	....	....	....	....	....
												F.	19	82	5	4	....
35	Abortion	650–652	....	398	....	1,179	·33	....	3·0	....	28	M.	....	....	....	....	....
												F.	139	258	1	....	....
36	Delivery Complications and Complications of Puerperium	660–689	....	8	....	33	·01	....	4·1	....	29	M.	....	....	....	....	....
												F.	4	4	....	....	....
37	Diseases of Skin and Cellular Tissue	690–716	481	419	6,155	6,164	3·44	12·8	14·7	32	35	M.	82	375	21	....	....
												F.	67	334	9	4	....
38	Arthritis and Rheumatism except Rheumatic Fever	720–727	136	184	3,434	4,857	2·31	25·3	26·4	39	52	M.	10	116	10	....	....
												F.	12	150	20	....	....
39	Osteomyelitis and Other Bone and Joint Diseases	730–738	236	132	4,256	3,379	2·13	18·0	25·6	25	39	M.	16	197	21	2	....
												F.	8	107	16	....	....
40	Other Diseases of Musculo-Skeletal System	740–749	117	171	982	2,189	·89	8·4	12·8	27	42	M.	8	97	10	2	....
												F.	25	133	10	....	....
41	Congenital Malformations	750–759	263	256	2,895	2,710	1·56	11·0	10·6	9	9	M.	19	160	70	....	....
												F.	22	147	72	2	....
42	Birth Injuries, Infections of New Born	760–776	79	72	633	678	·37	8·0	9·4	2	1	M.	12	56	9	....	....
												F.	7	52	9	....	....
43	Symptoms referable to Systems or Organs	780–789	1,057	816	9,004	6,830	4·42	8·5	8·4	38	37	M.	137	723	106	69	22
												F.	77	555	97	67	20

44	Ill-defined Diseases	790–795	160	212	1,496	2,106	1·01	9·4	9·9	41	47	M. F.	7 6	100 145	41 48	5 3	7 10
	Total	....	11,624	11,894	141,933	145,105	80·12	12·2	12·2	36	38	....	3,364	16,206	2,357	465	1,126
45	Fractures of Skull and Face Bones	N800–N804	254	98	3,405	773	1·17	13·4	7·9	28	26	M. F.	23 8	215 80	7 9	....	9 1
46	Fractures and Dislocations of Vertebral Column	N805–N806	66	22	2,804	602	·95	42·5	27·4	35	48	M. F.	1	58 21	5	1	1 1
47	Other Fractures of Trunk, Sternum and Larynx	N807–N809	80	44	2,216	969	·89	27·7	22·0	42	53	M. F.	5 2	70 39	2 1	....	3 2
48	Fractures of Upper Limb	N810–N819	356	209	1,779	1,380	·88	5·0	6·6	20	30	M. F.	13 7	333 197	9 5	....	1 ....
49	Fractures of Lower Limb	N820–N829	371	359	10,872	15,485	7·36	29·3	43·1	35	62	M. F.	24 14	328 298	11 9	....	8 38
50	Dislocation without Fracture	N830–N839	76	31	1,012	327	·37	13·3	10·5	27	35	M. F.	16 8	60 21	 1	....	 1
51	Sprains and Strains	N840–N848	52	30	374	207	·16	7·2	6·9	29	33	M. F.	5 1	44 28	3 1	....	....
52	Head Injury excluding Skull Fracture	N850–N856	883	385	6,124	2,797	2·49	6·9	7·3	25	26	M. F.	112 63	731 306	15 6	8 3	17 7
53	Internal Injury of Chest, Abdomen and Pelvis	N860–N869	56	17	1,205	237	·40	21·5	13·9	27	30	M. F.	12 3	41 12	....	 1	3 1
54	Lacerations, Contusions and Superficial Injuries	N870–N929	687	264	4,532	1,553	1·70	6·6	5·9	23	19	M. F.	69 28	603 227	12 9	1	2 ....
55	Effects of Foreign Body entering through Orifice	N930–N936	87	85	428	219	·18	4·9	2·6	25	35	M. F.	30 33	55 47	2 5	....	....
56	Burns	N940–N949	190	91	2,510	1,684	1·17	13·2	18·5	15	16	M. F.	25 9	157 76	4	....	4 6
57	Injury to Nerves and Spinal Cord without Bone Injury	N950–N959	30	6	416	37	·13	13·9	6·2	32	18	M. F.	3	22 6	4	....	1 ....
58	Effects of Poisons	N960–N979	330	325	1,400	1,633	·85	4·2	5·0	16	22	M. F.	85 105	223 205	19 9	1 2	2 4
59	Effects of Exposure and Unspecified Injuries and Reactions	N980–N999	249	149	1,918	1,756	1·02	7·7	11·8	33	35	M. F.	35 25	205 114	7 6	1	1 4
	Total (N Categories)	....	3,767	2,115	40,995	29,659	19·72	10·9	14·0	25	32	....	764	4,822	161	18	117
60	Investigations, Observations and After-Care	Y00–Y10	70	54	267	298	·16	3·8	5·5	18	32	M. F.	5 1	28 13	11 7	26 33	....
	Total (Y Categories)	....	70	54	267	298	·16	3·8	5·5	18	32	....	6	41	18	59	....
	Grand Total	....	15,461	14,063	183,195	175,062	100·00	11·8	12·4	33	37	....	4,134	21,069	2,536	542	1,243

* Results : 1 = Cured
2 = Improved
3 = Unchanged
4 = Investigation only
5 = Death.

OPERATION CASES DISCHARGED, 1962

Item	Operation	Code of Surgical Operations	Number of Cases		Number of Days in Hospital		Per cent. of Total Oper'n Beds *	Average Number Days in Hospital		Average Age of Patients		Results					
			Male	Female	Male	Female		Male	Female	Male	Female	Sex	1	2	3	4	5
1	Neurosurgery, Brain and Cerebral Meninges	001–019	96	74	3,621	2,554	3·56	37·7	34·5	32	36	M.	6	61	14	....	15
												F.	8	47	14	....	5
2	Neurosurgery, Spinal Cord and Spinal Meninges	020–029	38	27	960	682	·95	25·3	25·3	40	39	M.	3	24	6	3	2
												F.	5	13	3	....	6
3	Neurosurgery, Pheripheral Nerves and Sympathetic System	030–049	49	40	883	287	·67	18·0	7·2	45	48	M.	4	39	4	2	....
												F.	11	28	1	....	....
4	Throid and Parathyroid	070–079	13	32	254	455	·35	11·8	14·2	34	38	M.	2	9	2	....	....
												F.	6	25	....	....	1
5	Adrenals	080–084	3	3	58	152	·12	19·3	50·7	41	39	M.	....	3	....	....	....
												F.	1	2	....	....	....
6	Pituitary, Thymus and Other Endocrine Organs	085–096	1	1	31	4	·02	31·0	4·0	50	54	M.	....	1	....	....	....
												F.	....	....	....	....	1
7	Ophthalmic Operations	100–199	381	333	4,790	4,010	5·07	12·6	12·0	36	39	M.	18	349	13	....	1
												F.	22	302	9	....	....
8	Ear, Nose, Throat, Pharynx, Tongue, Palate, Buccal Cavity	200–249 and 260–299	964	785	6,268	4,326	6·11	6·5	5·5	20	22	M.	200	699	45	7	13
												F.	138	598	38	4	7
9	Teeth and Gums	250–259	95	103	429	285	·41	4·5	2·8	21	19	M.	17	76	2	....	....
												F.	25	75	3	....	....
10	Heart and Pericardium and Intrathoracic Great Vessels	300–329	41	58	609	1,155	1·02	14·8	19·9	22	28	M.	2	23	9	3	4
												F.	6	37	12	....	3
11	Lung, Bronchus, Mediastinum and Collapse Therapy	330–354	118	41	1,977	833	1·62	16·7	20·3	45	40	M.	18	52	33	6	9
												F.	3	26	6	....	6
12	Operation on Breast	380–389	4	92	104	1,568	·96	26·0	17·0	40	50	M.	....	4	....	....	....
												F.	13	67	4	8	....
13	On Abdominal Wall	400–419	406	265	6,368	4,977	6·55	15·7	18·8	45	49	M.	96	264	10	8	28
												F.	57	145	20	19	24
14	On Stomach	420–439	107	58	2,528	1,399	2·27	23·6	24·1	50	53	M.	21	76	3	1	6
												F.	8	41	5	....	4
15	On Appendix	440–449	384	369	3,734	3,001	3·89	9·7	8·1	22	24	M.	181	201	1	....	1
												F.	158	205	4	....	2
16	On Intestines except Appendix and Rectum	450–469	81	100	2,188	2,221	2·54	27·0	22·2	45	57	M.	13	53	8	2	5
												F.	16	58	7	4	15
17	On Rectum and Anus	470–499	135	95	1,934	1,289	1·86	14·3	13·6	44	48	M.	32	92	6	2	3
												F.	27	64	2	....	2
18	On Liver and Bile Ducts	500–529	59	167	1,448	3,509	2·86	24·5	21·0	58	57	M.	23	31	3	....	2
												F.	52	106	4	....	5
19	On Pancreas	530–539	1	1	5	26	·02	5·0	26·0	23	67	M.	....	1	....	....	....
												F.	....	....	....	....	1
20	On Spleen	540–549	14	4	220	128	·21	15·7	32·0	25	38	M.	3	8	1	....	2
												F.	2	1	1	....	....
21	On Kidney and Ureter	600–639	96	79	2,339	1,485	2·21	24·3	18·8	40	43	M.	15	67	9	2	3
												F.	12	59	5	1	2

OPERATION CASES DISCHARGED, 1962—*continued*

Item	Operation	Code of Surgical Operations	Number of Cases		Number of Days in Hospital		Per cent. of Total Oper'n Beds *	Average Number Days in Hospital		Average Age of Patients		Results					
			Male	Female	Male	Female		Male	Female	Male	Female	Sex	1	2	3	4	5
22	On Bladder and Urethra	640–669	344	170	5,052	1,985	4·06	14·7	11·7	55	49	M.	32	195	44	61	12
												F.	15	77	32	41	5
23	On Prostrate and Seminal Vesicles	670–679	210	....	5,475	....	3·16	26·1	....	72	....	M.	62	131	3	....	14
												F.	....	....	....	....	....
24	Other Male Genital Organs	680–699	185	....	1,424	....	·82	7·7	....	17	....	M.	40	139	5	....	1
												F.	....	....	....	....	....
25	On Ovary and Fallopian Tubes	700–719	....	152	....	1,713	·99	....	11·3	....	33	M.	....	....	....	....	....
												F.	14	124	12	1	1
26	On Uterus and Supporting Structures	720–739	....	625	....	4,611	2·66	....	7·4	....	40	M.	....	....	....	....	....
												F.	84	420	34	85	1
27	On Vagina, Vulva and Perineum	740–759	....	218	....	2,606	1·51	....	11·9	....	48	M.	....	....	....	....	....
												F.	42	148	25	1	2
28	Obstetric Operations (D. and O.)	760–799	....	412	....	1,709	·99	....	4·1	....	29	M.	....	....	....	....	....
												F.	149	261	1	1	....
29	Orthopaedic Surgery	800–899	1,215	895	20,902	23,673	25·72	17·2	26·4	31	45	M.	99	1,067	31	6	12
												F.	74	764	23	1	33
30	On Peripheral Blood Vessels and Lymphatic System	900–929	143	140	2,245	2,333	2·64	15·7	16·7	45	44	M.	11	80	39	3	10
												F.	21	77	25	4	13
31	On Skin and Subcutaneous Tissue	930–949	1,058	627	11,589	7,002	10·73	10·9	11·2	30	30	M.	180	852	16	3	7
												F.	145	469	10	....	3
32	Other Surgical Procedures	950–999	250	172	3,383	2,600	3·45	13·5	15·1	37	40	M.	18	192	24	4	12
												F.	11	127	25	1	8
	Total	....	6,491	6,138	90,718	82,578	100·00	14·0	13·5	48	50	....	2,222	9,155	656	284	312

* Operation cases occupied one-half of the total bed days. To find the percentage of total beds occupied by the various types of operation cases, divide the percentage figure in Column 6 by 2.

Royal Perth Hospital, Fremantle Hospital and Princess Margaret Hospital

ACCIDENTS, POISONINGS AND VIOLENCE, 1962

Accident	"E" Code	Number of Patients	Days in Hospital	Percentage of Hospital Beds Occupied	Average Age of Patients	Number Died
Railway Accidents	800–802	18	271	·08	37	2
Motor Vehicle Traffic Accidents	810–825	1,532	24,422	6·82	29	35
Motor Vehicle Non-Traffic Accidents	830–835	44	458	·13	22	....
Other Road Vehicle Accidents	840–845	130	891	·25	14	1
Water Transport Accidents	850–858	14	438	·13	34	....
Aircraft Accidents	860–866	1	20	·006	34	....
Accidental Poisoning	870–895	369	1,247	·35	8	3
Accidental Falls	900–904	1,306	23,150	6·46	39	50
Accidents caused by Hot Substances, Corrosive or Steam	917	172	1,769	·49	11	2
Other Accidents	910–936	1,672	12,876	3·59	24	18
Medical and Surgical Complications and Therapeutic Misadventures	940–959	199	1,988	·55	35	3
Late Effects of Injury	960–965	16	356	·10	14	....
Suicide and Self-Inflicted Injury	970–979	282	1,917	·53	34	3
Homicide and Assault	980–985	115	724	·21	37	....
Total	....	5,870	70,527	19·69	....	117

Appendix XXI

INCIDENCE AND MORTALITY OF NOTIFIABLE DISEASES

Diseases Notifiable	1959			1960			1961			1962		
	Cases Reported	Amend. Diagnosis	Deaths	Cases Reported	Amend. Diagnosis	Deaths	Cases Reported	Amend. Diagnosis	Deaths	Cases Reported	Amend. Diagnosis	Deaths
Acute Rheumatism	15	15	(A) 7	14	14	(A) 7	10	10	(A) 3	9	9	(A) 4
Amoebiasis	1	1	1	5	5	....	2	2	....	1	1	....
Ankylostomiasis	1	1	....	....	....	....	....	....	2	15	15	....
Breast Abscess	....	....	....	....	....	....	....	....	....	9	9	....
Brucellosis	8	8	....	7	7	....	5	5	....	6	6	....
Chorca	2	2	1	3	3	....	....	....	....	....	....	....
Dengue Fever	1	1	....	....	....	....	....	....	....	....	....	....
Diphtheria	49	48	1	5	5	....	15	15	....	17	17	1
Dysentery (Amoebic)	1	1	1	5	5	....	5	5	....	2	2	....
Dysentery (Bacillary)	188	188	2	104	104	....	117	117	3	179	179	5
Encephalitis Lethargic	....	....	....	....	....	....	2	2	....	....	....	....
Erythema Nodosum	1	1	....	1	1	....	....	....	....	....	....	....
Hydatid	....	....	1	1	1	....	....	....	....	1	1	1
Infantile Diarrhoea	26	26	(B) 12	30	30	(B) 10	48	48	(B) 23	49	49	(B) 24
Infective Hepatitis	142	142	2	256	256	4	262	262	4	115	115	2
Lead Poisoning	2	2	1	2	2	1	1	1	....	1	1	....
Leprosy	18	18	....	18	18	....	15	15	....	17	17	....
Leptospirosis	2	2	....	9	9	....	13	13	....	7	7	....
Malaria	3	3	....	4	4	....	2	2	....	3	3	....
Meningococcal Infection....	3	3	4	4	4	2	2	2	1	2	2	4
Ornithosis	....	....	....	2	2	....	2	2	....	....	....	....
Paratyphoid	....	....	....	5	4	1	6	6	....	1	1	....
Poliomyelitis	3	3	....	14	7	....	3	3	....	6	6	1
Pleural Effusion	13	11	1	14	14	1	19	12	....	10	5	....
Puerperal Fever	3	3	....	1	1	1	3	3	....	....	....	....
Purulent Ophthalmia	50	50	....	67	67	....	29	29	....	29	29	....
Rubella	221	221	....	127	127	....	264	264	2	106	106	....
Salmonella Infection	40	40	....	28	28	....	43	43	....	61	61	....
Scarlet Fever	60	60	....	38	38	....	45	45	....	30	30	....
Tetanus	5	5	2	8	8	6	5	5	2	1	1	2
Trachoma	1,149	1,149	....	437	437	....	369	369	....	377	377	....
P.T.B.	345	309	24	322	282	28	246	197	18	275	238	24
Other T.B.	35	34	....	37	34	2	43	41	1	29	25	5
Typhoid Fever	8	8	1	1	1	....	4	4	....	5	5	....
Typhus Fever	6	6	....	....	....	....	4	4	....	....	....	....

Deaths include full-blood aboriginals.

(A) Rheumatic Fever.

(B) Gastro-Enteritis and Colitis (except Ulceration) under two years and Diarrhoea of the new born.

Appendix XXII

MATERNAL MORTALITY

Period	Average Live Births	Average Maternal Deaths	Average Rate
1901–1905	6,681	28·0	4·19
1906–1910	7,691	43·4	5·64
1911–1915	8,844	39·4	4·46
1916–1920	7,726	41·4	5·36
1921–1925	8,056	34·2	4·25
1926–1930	8,748	46·8	5·35
1931–1935	8,062	35·4	4·39
1936–1940	8,877	32·4	3·65
1941–1945	10,408	24·4	2·34
1946–1950	13,130	21·4	1·63
1951–1955	15,724	13·8	0·88
1956–1960	16,922	8·2	0·48

Year	Live Births	Deaths From									
		Puerperal Septicaemia		Other Puerperal Infections		Abortion		All other Complications of Pregnancy and of the Puerperal State		All Complications of Pregnancy and the Puerperal State	
		No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1943	10,481	2	0·19	1	0·10	3	0·29	17	1·62	23	2·19
1944	10,870	2	0·18	2	0·18	5	0·46	18	1·66	27	2·48
1945	10,672	....	....	2	0·19	5	0·47	13	1·22	20	1·87
1946	12,105	....	....	3	0·25	5	0·41	18	1·49	26	2·15
1947	12,874	1	0·08	1	0·08	8	0·62	22	1·71	32	2·49
1948	12,981	2	0·15	4	0·31	1	0·08	13	1·00	20	1·55
1949	13,511	....	....	2	0·15	3	0·22	11	0·81	16	1·18
1950	14,228	....	....	2	0·14	1	0·07	12	0·70	13	0·91
1951	14,794	....	....	2	0·14	3	0·20	11	0·74	16	1·08
1952	15,413	....	....	3	0·19	3	0·19	12	0·78	18	1·17
1953	15,862	....	....	....	....	1	0·06	8	0·50	9	0·57
1954	15,928	....	....	....	....	5	0·31	7	0·44	12	0·75
1955	16,623	....	....	....	....	1	0·06	13	0·78	14	0·84
1956	16,916	....	....	....	....	2	0·12	7	0·41	9	0·53
1957	16,924	....	....	....	....	3	0·18	8	0·47	11	0·65
1958	16,731	....	....	....	....	1	0·06	7	0·42	8	0·48
1959	17,111	....	....	....	....	1	0·06	4	0·23	5	0·29
1960	16,926	1	0·06	....	....	3	0·18	4	0·24	8	0·47
1961	17,078	....	....	....	....	2	0·12	5	0·29	7	0·41
1962	17,064	....	....	....	....	1	0·06	4	0·23	5	0·29

All Rates per thousand live births

Place	1959	1960	1961	1962
Western Australia	0·29	0·47	0·41	0·29
New Zealand (*a*)	0·49	0·34	0·33	....
New South Wales	0·67	0·68	0·50	0·34
Victoria	0·26	0·25	0·32	0·18
Queensland	0·59	0·68	0·76	0·64
Tasmania	0·02	0·45	0·33	0·34
South Australia	0·30	0·62	0·27	0·61

(*a*) Non-Maori.

Appendix XXIII

STILLBIRTH AND INFANT MORTALITY RATES

Year	Total Births including Stillbirths	Stillbirth Rates	Mortality Rates			Total mortality rates under one year	Total mortality rates under one year including Stillbirth
			Under one week	Under one month	Over one month and under one year		
1941	10,375	24·6	15·1	18·1	15·7	34·4	59·0
1942	10,109	20·6	17·1	20·3	15·9	36·2	56·8
1943	10,759	25·8	17·1	21·0	10·8	31·8	57·6
1944	11,144	24·8	18·6	21·0	11·0	32·0	56·8
1945	10,896	20·6	18·0	20·0	8·9	28·9	49·5
1946	12,398	23·1	17·1	20·6	9·6	30·3	53·4
1947	13,178	23·2	16·9	19·4	13·2	30·2	53·4
1948	13,197	20·5	16·9	18·7	8·4	25·0	45·5
1949	13,779	19·4	16·2	19·0	6·8	25·9	45·3
1950	14,468	16·6	16·2	18·0	8·6	26·7	43·3
1951	15,091	19·7	16·2	19·7	8·5	28·2	47·9
1952	15,697	18·1	15·5	17·7	6·8	24·5	42·6
1953	16,130	16·6	13·4	16·2	7·3	23·4	40·0
1954	16,198	16·7	14·2	15·8	6·4	22·2	38·9
1955	16,862	14·2	13·3	15·8	6·3	22·1	36·3
1956	17,142	13·2	13·0	15·7	6·7	22·4	35·6
1957	17,169	14·3	13·6	14·9	5·9	20·8	35·1
1958	16,956	13·3	12·8	14·2	7·1	21·2	34·5
1959	17,336	13·0	12·3	13·6	6·3	19·9	32·9
1960	17,152	13·2	13·9	15·7	5·7	21·3	34·5
1961	17,318	13·9	10·3	12·6	6·8	19·4	33·3
1962	17,267	11·8	12·6	14·3	7·7	22·0	33·8

In above table all rates are calculated in deaths per 1,000 of total births, including stillbirths.

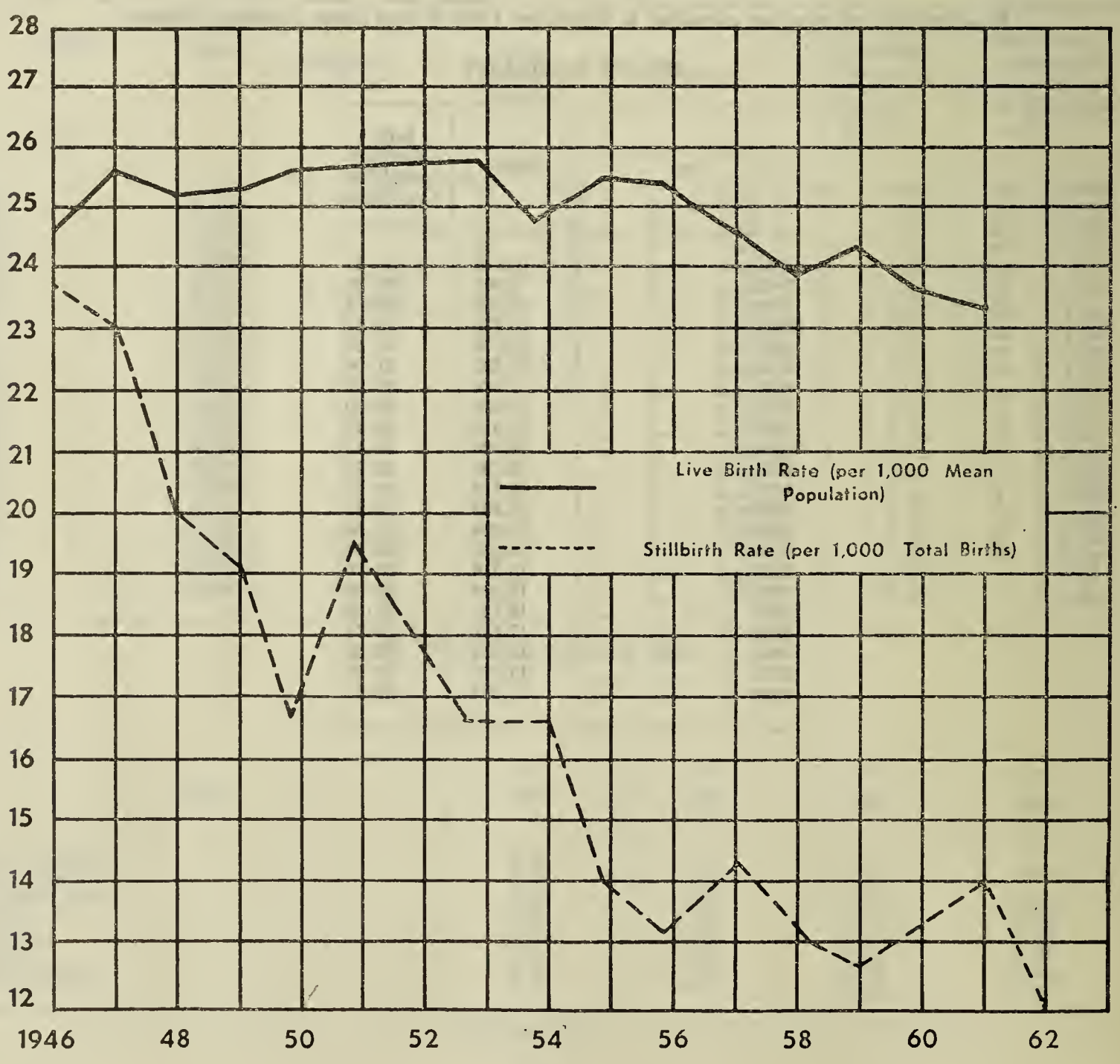
INFANT MORTALITY

Year	Births	Infant Mortality per 1,000 Live Births
1941	10,118	35·28
1942	9,901	36·86
1943	10,481	32·63
1944	10,870	32·57
1945	10,672	29·52
1946	12,105	31·06
1947	12,874	30·92
1948	12,931	25·60
1949	13,511	26·42
1950	14,228	27·13
1951	14,794	28·73
1952	15,413	24·91
1953	15,862	23·83
1954	15,928	22·54
1955	16,623	22·44
1956	16,916	22·70
1957	16,924	21·09
1958	16,731	21·52
1959	17,111	20·16
1960	16,926	21·62
1961	17,078	19·67
1962	17,064	22·27

Appendix XXVI

WESTERN AUSTRALIA – STILLBIRTH AND BIRTH RATES

Year	Mean Population	Live Births		Stillbirths	
		Number	Rate per 1,000 Mean Population	Number	Rate per 1,000 Total Births
1946	492,771	12,105	24·57	293	23·63
1947	502,951	12,874	25·60	304	23·07
1948	514,621	12,931	25·13	266	20·16
1949	532,603	13,511	25·37	268	19·45
1950	557,878	14,228	25·50	240	16·59
1951	580,317	14,794	25·49	297	19·68
1952	600,615	15,413	25·66	284	18·09
1953	621,034	15,862	25·54	268	16·62
1954	639,963	15,928	24·89	270	16·67
1955	657,323	16,623	25·29	239	14·17
1956	674,459	16,916	25·08	226	13·18
1957	687,448	16,924	24·62	245	14·27
1958	699,915	16,731	23·90	225	13·27
1959	711,737	17,111	24·04	225	12·98
1960	722,900	16,926	23·41	226	13·18
1961	737,386	17,078	23·16	240	13·86
1962	755,259	17,064	22·59	203	11·76



Appendix XXV

MEAT INSPECTION FOR THE YEAR ENDED 31st DECEMBER, 1962

Number and Type of Animals Slaughtered			Carcases Condemned for—									Part Carcases Condemned for—						Organs Condemned for—					
			Tuberculosis	Actinomycosis	Piroplasmosis	Caseous Lymphadenitis	Para-Typhoid	Traumatic and Septic Conditions	Pleuro-Pneumonia	Other Abnormalities	Total Carcases Condemned	Actinomycosis	Caseous Lymphadenitis	Tuberculosis	Arthritis	Other Abnormalities	Total Part Carcases Condemned	Actinomycosis	Echinococcosis	Pleuro-Pneumonia	Tuberculosis	Other Abnormalities	Total Organs Condemned
Robb's Jetty (including Watson's and Anchorage Butchers)																							
Cattle	....	18,466	27	....	....	....	....	101	....	83	211	102	....	....	....	51	153	143	61	....	52	653	909
Calves	....	654	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	2
Sheep	....	238,180	....	....	....	....	7	118	....	76	201	....	408	....	345	5	758	....	248	....	....	14,754	15,002
Pigs	....	125,376	44	....	....	....	120	58	....	134	356	....	....	1,149	123	1,234	2,506	....	5	....	14	33,082	33,101
Midland Junction (including Fogitt's)																							
Cattle	....	53,058	86	....	....	....	....	61	....	78	225	169	....	76	4	76	325	211	168	....	50	1,298	1,727
Calves	....	6,032	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	1	1
Sheep	....	674,189	....	....	....	....	301	266	....	3,087	3,654	....	765	....	815	71	1,651	....	411	....	....	77,335	77,746
Pigs	....	81,642	22	....	....	....	14	39	....	77	152	1	....	185	472	112	770	....	10	....	....	12,265	12,275
Kalgoorlie																							
Cattle	....	1,934	....	....	....	....	....	....	....	2	2	27	....	1	....	2	30	1	....	....	....	51	52
Calves	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sheep	....	37,643	....	....	....	....	1	5	....	27	33	....	53	....	27	17	97	....	54	....	....	1,927	1,981
Pigs	....	3,232	....	....	....	....	....	1	....	4	5	....	....	8	....	5	13	....	....	....	....	189	189
Perth Meat Markets																							
Cattle	....	1,074	....	....	....	....	....	18	....	3	21	....	....	....	....	1	1	....	....	....	....	46	46
Calves	....	6,302	....	....	....	....	....	13	....	77	90	....	....	....	....	....	....	....	....	....	....	30	30
Sheep	....	4,791	....	....	....	....	....	2	....	52	54	....	....	....	....	....	....	....	....	....	....	....	....
Pigs	....	335	4	....	....	....	....	5	....	9	18	....	....	....	....	1	1	....	....	....	....	13	13
Fremantle Meat Markets																							
Cattle	....	144	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	1	1
Calves	....	825	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	6	6
Sheep	....	25	....	....	....	....	....	....	....	4	4	....	....	....	....	....	....	....	....	....	....	....	....
Pigs	....	132	....	....	....	....	3	....	....	....	3	....	....	3	....	4	7	....	....	....	....	....	....
** Country Districts*																							
Cattle	....	34,029	33	....	....	....	....	52	....	15	100	35	....	48	11	57	151	92	109	....	24	509	734
Calves	....	11,859	....	....	....	....	....	8	....	215	223	....	....	....	2	2	4	....	....	....	....	12	12
Sheep	....	261,998	....	....	....	....	47	184	....	416	647	....	255	....	193	129	577	....	1,153	....	....	7,547	8,700
Pigs	....	18,217	22	....	...	....	13	46	....	25	106	....	....	162	78	91	331	....	31	....	40	3,092	3,163

Totals—

Cattle	108,705
Calves	25,672
Sheep	1,216,826
Pigs	228,934
Total	1,580,137

* Country Districts included the following centres :—Albany, Busselton, Collie, Dardanup, Donnybrook, Geraldton, Harvey, Katanning, Mandurah, Merredin, Manjimup, Narrogin, Northam, Plantagenet, Denmark, Wagin, Waroona, York.

Note.—Return from York was from 16/4/62 to 31/12/62.

Appendix XXVI

REVENUE AND EXPENDITURE FOR THE YEAR 1962

REVENUE

	£	s.	d.
Anatomy Licenses	27	0	0
Baby Patterns	4	12	6
Building Inspection Fees	945	0	6
Examination Septic Tank Plans	18,827	14	2
Fish Branding Fees	908	5	1
North-West Health Inspectors Scheme (Kimberley)	50	0	0
Infectious Diseases—			
General	13,191	8	1
Other	125	17	3
Local Health Authority—Proportion Immunisation Diphtheria	249	17	0
Health Laboratories—			
Water Sampling Fees	300	0	0
Fees—Albany	1,420	6	0
Bunbury	5,197	0	10
Derby	754	11	5
Geraldton	1,316	6	6
Narrogin	969	12	10
Northam	629	0	5
Wooroloo	126	12	8
Maternity Home and Private Hospital Licenses	51	10	0
Meat Branding Fees	21,522	0	10
Nurses Registration and Examination Fees	3,077	1	3
Other (including Pest Control)	6,704	18	8
Pathological Fees (Public)—Central Laboratories	7,872	1	6
Pathological Fees—Commonwealth Recoups	3,996	5	0
Perth M.O. Fees	512	3	6
Pesticide Registration Fees	262	17	6
Polio Refunds (1956–57)	53	10	0
Polio After-Care	256	11	6
Radioactive Substances Act	124	0	0
Sanitary Fixtures and Fittings Fees	76	9	0
Sanitation—Other	274	3	6
Tuberculosis—Laboratory Unit Costs—Chest Clinic	15,748	10	0
Non-Tuberculosis—Laboratory Unit Costs—Perth Chest Hospital	19,406	2	6
Tuberculosis—Laboratory Unit Costs—Perth Chest Hospital	17,798	2	6
Wooroloo Isolation—Hospital Benefits—Lepers	268	0	0
Wooroloo Isolation—S. & O. Benefit—Lepers	440	0	0
Derby Dentists Fees	1,846	1	5
Port Hedland Dentist Fees	1,095	19	3
Tuberculosis Diagnosis—			
Commonwealth Capital Recoups	8,598	13	9
Commonwealth Maintenance Recoups	420,871	0	0
	£594,617	3	5

EXPENDITURE

	£	s.	d.
Salaries (including Tuberculosis)	541,564	1	4
Infectious Diseases	46,696	4	6
School Medical Doctors and Nurses Travelling	6,050	12	9
Dental Bursaries	10,676	6	5
School Dentists Travelling and Expenses	6,241	17	4
School Medical and Dental Services—Other Expenditure	9,133	9	9
Travelling and Transport Generally	4,532	8	11
Travelling and Transport Commissioner and Medical Officer	1,431	9	6
Opthalmic Survey	2,048	19	6
Postage and Telephones	2,353	2	4
Laboratory	71,585	6	7
Venereal Diseases	3,560	14	4
Infant Welfare Centre (including Salaries)	126,713	17	11
Maintenance and Transport—Lepers	54,809	3	9
Poliomyelitis	24,767	6	9
Sanitation—Government Buildings	13,590	6	2
Tuberculosis Clinics	276,312	11	6
Miscellaneous	30,006	7	10
	£1,232,074	7	2

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